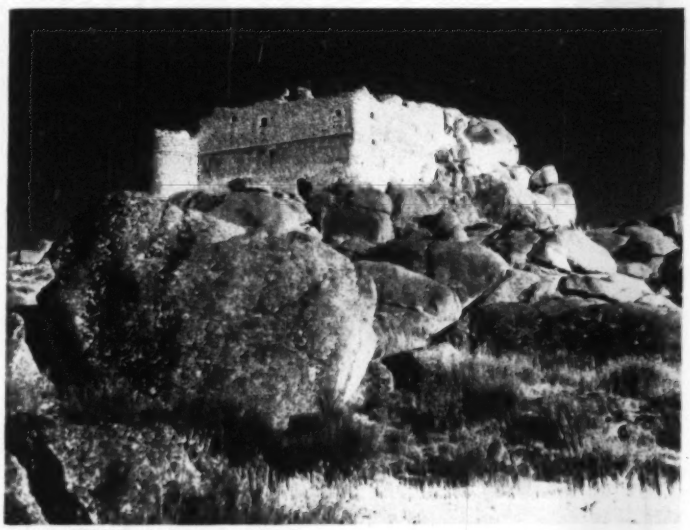
MARGINALIA

Castles in Spain

Though it must seem unfair to those brought up in the best traditions of wishful thinking to exhibit photographs of what castles in Spain look like, the recent exhibition of Spanish Castles at the RIBA produced many images that were fully as fantastic as any pipe-dreamer could hope to see—Almansa perched on its rock, the square keep of Fuensaldana towering haughtily over the fields, the Levantine bastions of Avila, Navas del Marques looking improbably like a model crofting settlement or nineteenth-century gasworks, and—most fantastic of all—El Miron, near Avila, 1, crowning a formidable tumulus of gigantic rocks. The exhibition was assembled by the Associación de Amigos de los Castillos, an organization formed in 1952 to unite the efforts of all Spaniards interested in the history and preservation of the country's five-thousand-odd mediaeval castles.



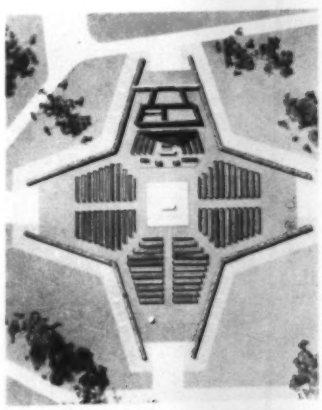
1, castle of El Miron in the province of Avila.

Christ Chapel, Overbrook

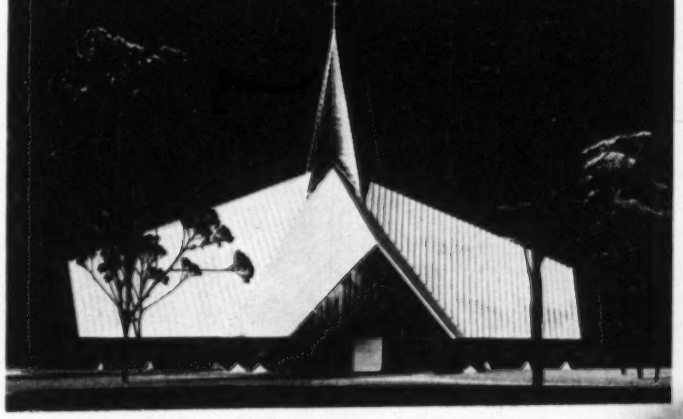
The possibilities of using a tapered greek-cross plan for protestant liturgy are already being explored in Germany, in such works as Hentrich's church at Duren (*Marginalia*, March, 1956), and now a similar plan, 2, is proposed by Vincent King for Christ Chapel on the campus of the Episcopal Academy at Overbrook near Philadelphia. In plan, the US version is even more formal than the German, with a centrally situated altar (an idea more in line with the ideas of the 'Liturgical' wing of European religious thought, discussed in the article beginning on page 240) but the exterior conforms to recent US trends for ridge-roofed informality in ecclesiastical architecture, with four low-spread, copper-clad roofs, 3, rising to a central *fleche* standing over the crossing. The fleche is to be glazed, in order to admit light through an oculus on to a cross suspended above the altar, and the gable ends of the arms of the plan are to be used for stained glass.

US Embassy in Rabat

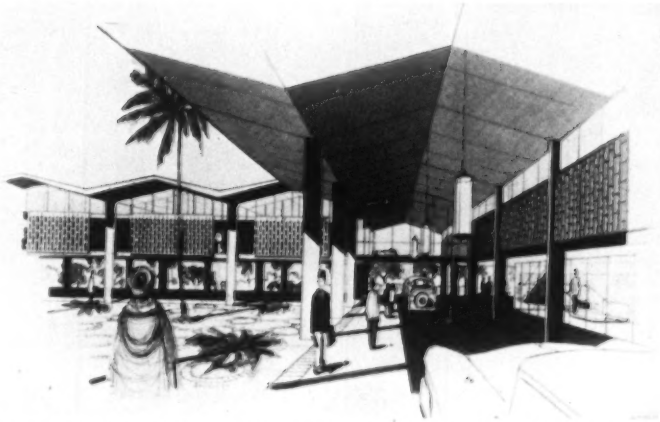
Ketchum, Gina and Sharp's project for an Embassy in Rabat, the capital of Morocco, stands somewhat closer to US domestic architectural norms than do other recent examples of American diplomatic design. As the perspective shows, 4, this should be the world's first drive-in Embassy, and the whole design has a distinctly supermarket feeling. The roof treatment, unlike that of Sert's scheme for Baghdad, is not a true sunshade, with the roof carried clear of the structure over an air-gap, but relies on deep overhangs and through ventilation across the top of the first-floor workspaces to achieve workable internal climate. Such an approach is not to be interpreted as a deviation from the current US policy of handling local preferences and architecture sympathetically—not only are regional materials to be used, but since the climatic conditions of Rabat are comparable with those of Southern California, this design might serve as a piece of unobtrusive technical-aid-by-suggestion, an export of US know-how.



2, plan of Christ Chapel, Overbrook, USA.



3, elevation of the model of Christ Chapel.



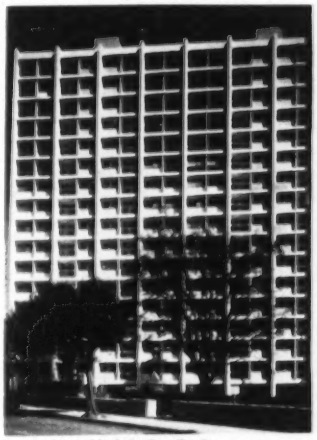
4, main entrance to the Embassy at Rabat, which has a view of the entire city and of the Atlantic.

Leo Bruhns

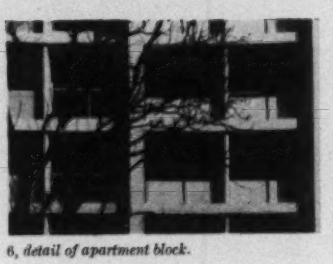
Leo Bruhns, German art historian and a friend of many who worked in Rome, died a few months ago. He was born in Estonia in 1884, went to school at St. Petersburg, became a lecturer at Frankfort, then Wilhelm Pinder's successor at Leipzig and finally director of the Biblioteca Hertziana in Rome. He belonged to that generation of German scholars to which *Bildung* in the meaning of Goethe and Humboldt still meant everything. He was a religious man (a Protestant) and a man of scrupulous integrity. As a scholar he started with studies of sculpture first of the late Gothic period, then of Mannerism and Early Baroque (both in the form it took at Würzburg). He then published a general history of art in a number of small volumes, impeccably written and popular in the best sense. When he had moved to Rome (with a sigh of relief, for by then National Socialism had been busy for ten years in the German universities) he began work on his *magnum opus*, *Die Kunst der Stadt Rom*, a history of art in Rome from the Lupa to Canova, in over 600 pages and brought out in 1951 by Anton Schroll in Vienna in two volumes with 460 illustrations. Bruhns's task was formidable indeed. It required extensive reading and seeing and patience and a long breath. All these qualities he possessed, and the story unfolds at an unhurried tempo. The book is, moreover, warmly written and totally devoid of personal mannerisms and axes to grind. It is indeed a beautiful book, far too little known in England where it would prove both instructive as a reference book and enjoyable as a book to read before and during a journey.

Bienal Prizewinner

Although the presence of such entries as the Olivetti Building, the Wogensky house, office blocks by Helmut Hentrich, and so forth, meant that most of the field for the architecture prizes at the 1957 Bienal at Sao Paulo started as favourites, there were a few outsiders among the entries, and a small proportion of these actually collected awards. By far the most accomplished of these was the apartment block in Sao Paulo, 5, by Salvador Candia, Plinio Croce and R. C. Aflalo, unmistakably Miesian in inspiration yet



5, apartment block in Sao Paulo.



6, detail of apartment block.

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Yerbury Foundation

The announcement of a new independent research foundation in architecture is clearly an important development in architectural education, but when it also gives a crown of recognition to a pioneer who himself has done much to improve the flow of architectural information, then it is doubly welcome. The Yerbury Foundation, instituted by the Architectural Association in honour of F. R. Yerbury, is intended to provide the AA with funds for advanced study in a number of fields, the probable fields being indicated by the presence of two progressive design-conscious industrialists (Lord Wilmot and Sir Colin Anderson) among its seven trustees. The Foundation, having been formally set up, is now launching its first appeal for funds, further information on the subject being obtainable from the Secretary to the Trustees, 34-36 Bedford Square, London, WC1.

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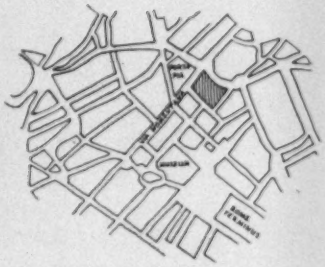
However, between the old Embassy and the chancery offices, there was (and still is, albeit unkempt) a fine *giardino inglese*, 8, including part of the ancient walls of Rome, one of the few green areas in what is now a densely built-up part of the city. It is understood that the British Government is proposing to sell off nearly a third of this irreplaceable garden to a private developer, in order to defray expenses—an outrage which would be very poor diplomacy given the present temper of Roman opinion (cf. the fate of the Hilton Hotel) and would, in fact, be contrary to Roman town-planning legislation, since the garden is scheduled as an undevelopable *parco privato* and would require a special municipal permit to be built on.



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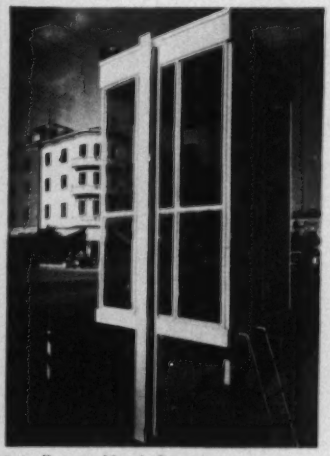

9, traffic control box in Parma.

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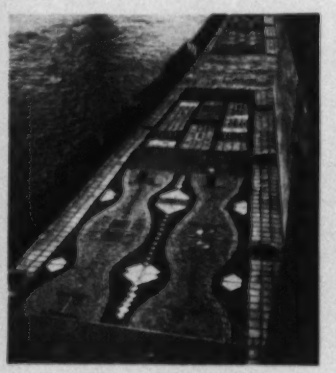

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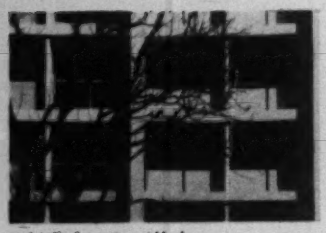

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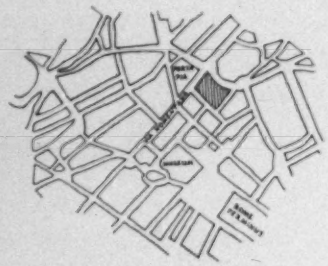

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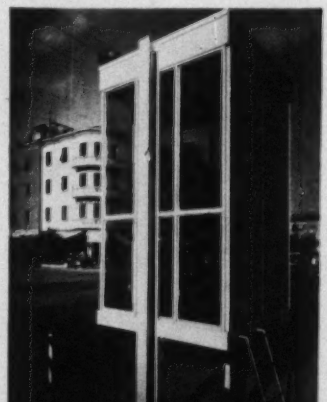

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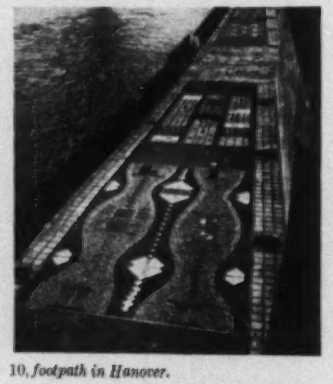

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THE ARCHITECTURAL REVIEW

Volume 123 Number 735 April 1958

This Month's Cover shows, in model, drawing and progress photograph, the new church of Notre Dame at Royan, France, designed by Guillaume Gillet and his engineer, the late Bernard Laffaille. Though the immediate impact of these illustrations is structural, the church also answers to the new concepts of functional liturgical planning that are discussed in the article beginning on page 240.

225 **Marginalia**

228 **Frontispiece**

229 **Tridon** *by Reyner Banham* Among the architectural taste that have acquired what Mr. Banham calls 'secret society status' Paul Valery's *Eupalinos* is one of the most curious. It is normally read as a high-level exposition of the very essence of architecture, but it really discusses two different and mutually exclusive attitudes. One is that of the *Beaux-Arts*, which Valery understood and seemed to approve, personified by Eupalinos himself; the other is a species of inspired -functionalism of which he could have had no experience in the early Twenties when the book was written, but subsequently manifested itself in a new tradition that runs from Moholy-Nagy to Charles Eames, and is epitomised in *Eupalinos* by the figure of Tridon, the Phoenician Shipwright, who broke all the customary rules of behaviour, even those of ship-building.

232 **Offices at Newport Pagnell:** *Architects, Gordon and Ursula Bowyer*

236 **Offices at Birmingham:** *Architect, J. H. D. Madin*

240 **A Liturgical Brief** *by Peter Hammond* For want of a clear grasp of the problems at issue, church architecture is in danger of losing its way in false solutions based on a superficial understanding of the present situation of Christianity in the world. The issues are not concerned with creating shrines to the glory of God, nor inducing moods conducive to a worshipful frame of mind, but in developing a rational approach to the problem of planning for a live and active liturgy adapted to the present state of Christian thought. As the Rev. Peter Hammond points out, it is in those countries where the so-called Liturgical Movement is strongest; in its claims for a more active participation by the congregation in the rites of the church, that ecclesiastical design is currently in its most flourishing condition, because the existence of a live liturgy gives the architect a clear brief to direct his work. In England, where the movement has—as yet—little influence, it may require the architect to demand from his clients clear liturgical guidance, an approach that has just begun both to appear, and to promise more stimulating designs than have been produced here so far.

256 **House in the Isle of Wight:** *Architects, James Stirling and James Gowan*

261 **Interior Design** The inception, in this issue, of a regular supplement devoted to problems and achievements of interior design, is not an alteration of policy on the part of the ARCHITECTURAL REVIEW, but the filling-out of a complete coverage of building design in all its aspects. It is also a plea for a more open-minded approach to the problem of interior design in general, seeing it neither as something absolutely within the architect's control, nor as something entirely outside his responsibility, but rather as a field of expert, integrated, sympathetic constituency, like structural engineering.

263 **Interiors: Bank of London and South America:** *Architect, John Wright*

269 **Lamond of Dundee** *by D. M. Walker* The prestige of Mackintosh, and thus of Glasgow, has so overshadowed other progressive architecture of the period in Scotland, that the contribution of other architects and other towns has been overlooked. In this article Mr. Walker attempts to characterise and evaluate the work of William Gillespie Lamond, who worked in various Dundee offices from the mid-nineties almost to the first World War, and left the stamp of his very personal style—derived more from London than from Glasgow—on a number of buildings in the area.

272 **Current Architecture**

Miscellany

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284 **Cost Analysis and Cost Planning** *by John Carter* The body of mental disciplines that serve architectural design is at present undergoing a major extension in the direction of improved management techniques, and the first steps on this road are provided by Cost Analysis, and its complement, Cost Planning. Mr. Carter, who is the assistant editor concerned with these subjects on the *Architects' Journal*, discusses the nature and significance of costing techniques, and their impact on received ideas about design methods and the architect's relation to society.

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Authors: *Peter Hammond* studied at Bromley Art School 1937-40 and went on to the RCA with a scholarship. After war service in the Navy he read history at Merton College, Oxford, 1946-48 and studied in Greece 1948-50. He was ordained in 1951 and served on staff of St. Michael's, Oxford, 1951-53 and St. Thomas, Regent Street, London, 1953-55. In 1955 he married a graduate of Bryn Mawr, Pennsylvania, and he is now rector of Bagendon near Cirencester, where a large early-Victorian rectory in two acres of wilderness has become a regular meeting place for clergy and architects concerned with the problems of church design. His first book, *The Waters of Marah* was published in 1956 and he has recently completed a new book on contemporary French churches. *David Morrison Walker* was born in 1933 in Dundee and educated at Morgan Academy, Dundee, and thereafter to Dundee College of Art where he took the Scottish Art Diploma in 1954, and did a post diploma year as a result of a scholarship. Chiefly drawn and paints architecture, and has in consequence been interested in architectural history from about twelve. Around 1951 he began research on Dundee architects which led to the publication of *Architects and Architecture in Dundee, 1770-1914* (*Abertay Historical Society paper*, 1954). His post diploma year was spent producing *Nineteenth Century Mansions in the Dundee Area*, illustrated by forty-two lithographs, a private publication of Dundee College of Art, still not quite finished. Since 1952 has helped the Scottish National Buildings Record in a spare time capacity. He is now on National Service with the Royal Engineers at Longmoor in Hampshire. *Philip Hickson* was born in 1909 and educated at Stancliffe Hall, Derbyshire, and at Clifton College, Bristol. In 1930 he joined John Bill & Croyden Ltd. as electronic designer and while with them he designed among other things the 'cardiophone,' a heart beat amplifier. From 1931 to 1950 he was with Ardente Acoustic Laboratories where he designed long-range loud-speaking equipment which was later used extensively. In 1950 he joined the John Lewis Partnership and is now responsible for the radio, television and electrical service departments. He is a Fellow of the Royal Society of Arts and a Member of the Designers in Industry Association, and his hobbies are electronic circuit designing, model making and playing the guitar. *John Carter* was trained as an articled pupil in East Anglia, then worked for two years in the office of Louis de Soissons. From 1949-50 he was on the staff of the Medway College of Art, and from 1950-53 taught at the West of England School of Art. He joined the staff of the *Architects' Journal* in 1954, and is a co-opted member of the RIBA cost research committee.

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THE ARCHITECTURAL REVIEW

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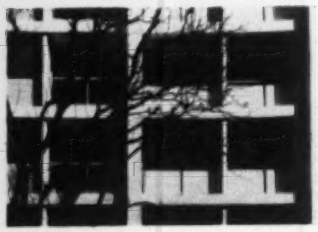
FIVE SHILLINGS



6, detail of apartment block.

entirely free from plagiarisms, and deploying, with unobtrusive yet unshakable logic, a graded system of rectilinear structural elements that range from main stanchions down to cladding, 6, mullions, to produce detailing that is as convincing and unforced as the totality of the block itself.

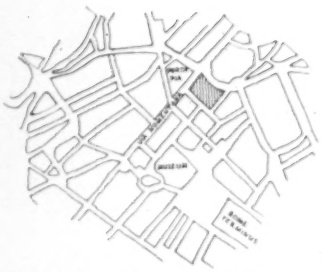
Yerbury Foundation

The announcement of a new independent research foundation in architecture is clearly an important development in architectural education, but when it also gives a crown of recognition to a pioneer who himself has done much to improve the flow of architectural information, then it is doubly welcome. The Yerbury Foundation, instituted by the Architectural Association in honour of F. R. Yerbury, is intended to provide the AA with funds for advanced study in a number of fields, the probable fields being indicated by the presence of two progressive design-conscious industrialists (Lord Wilmot and Sir Colin Anderson) among its seven trustees. The Foundation, having been formally set up, is now launching its first appeal for funds, further information on the subject being obtainable from the Secretary to the Trustees, 34-36 Bedford Square, London, WC1.

Embassy in Rome

In view of the way in which the British Government has succeeded in lowering its prestige abroad with the design of recent Embassy buildings, it is to be hoped that it will make some efforts to recover itself with its proposed new buildings in Rome. However, the position is complex—the Ambassador's residence is currently in the ex-villa Wolkonsky, and this is not the subject of any rebuilding proposals. What is proposed is to erect new Chancery buildings on the site of the old, destroyed embassy near the Porta Pia, 7, where a small chancery building already exists, having survived the destruction of the Embassy proper, most of whose foundations seem likely to disappear under the proposed widening of the via XX Settembre.

However, between the old Embassy and the chancery offices, there was (and still is, albeit unkempt) a fine *giardino inglese*, 8, including part of the ancient walls of Rome, one of the few green areas in what is now a densely built-up part of the city. It is understood that the British Government is proposing to sell off nearly a third of this irreplaceable garden to a private developer, in order to defray expenses—an outrage which would be very poor diplomacy given the present temper of Roman opinion (cf. the fate of the Hilton Hotel) and would, in fact, be contrary to Roman town-planning legislation, since the garden is scheduled as an undevelopable *parco privato* and would require a special municipal permit to be built on.



7, site of proposed British Embassy in Rome.

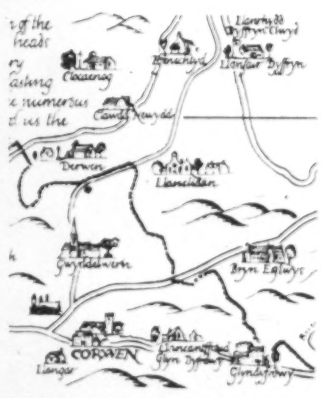
Unfortunately, there has been a recent precedent in developing just such a scheduled *parco*, that of the villa Chigi, which was carried through the relevant committees of the Roman Commune in the teeth of a 'counter-attack' opposition, and while the British Government is unlikely

8, the chancery garden today.

to descend to the tactics required to achieve such an end, it is possible that local developers who wish to buy the other third of the property might be prepared to try to influence the decision. It would appear to be a diplomatic and town-planning necessity for the Government to abandon the scheme at once—and apply themselves to the problem of a decently conducted competition to secure a design for new chancery buildings that will not precipitate another prestige-losing failure.

Monuments Map

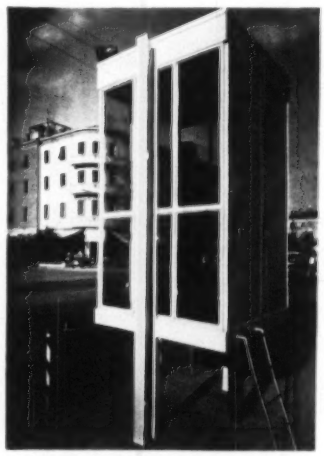
The Historic Buildings of North Wales is very nearly a valuable addition to British travel literature. Its aim is admirable—to give a map of all the ancient monuments in the Snowdon National Park (plus a gratifyingly large number of non-ancient ones) backed by a full gazetteer on the reverse of the sheet—but it falls just sufficiently short of its intentions to be irritating. The gazetteer, for instance, is full enough to give even architects' names, where they are known, and sufficiently sophisticated to spell gothic with a terminal *k* when required, but it is not always accurate—it gives the wrong map reference for Port Meirion, to name an example that many people might want to locate—while the map itself is drawn in an arty convention derived from Speed, 11, with perspective tummocks instead of contours, lettering à la Marion Richardson, which is not always readable, and weeny sketches of the monuments, mostly on too small a scale to serve as identification-checks for non-architectural tourists. The gazetteer can be put right by resetting, but it is difficult to see what can be done about the map.



11, a section of the monuments map of Snowdonia.

Parmesan Police Box

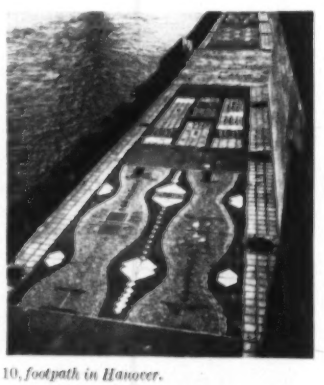
The flat juxtaposition of the ancient and the modern is probably easier to make—physically as well as psychologically—in Italy than anywhere else, and yet it is all too rarely made even there. Franco Carpanelli's crisply Miesian traffic control box (he is an ex-pupil of Mies van der Rohe) has been designed for Parma, in the heart of the 'Sitwell belt' of Emilian cities of art, but so far, 9, seems only to have been used in the broad *viali*, on the city's outskirts, or in areas of low historical and architectural interest. Since its pure rectangular aesthetics are of the sort generally rated timeless, it will be interesting to see how it stands up to an *ambiente storico*, and what sort of polemics attend any attempt to put it there.



9, traffic control box in Parma.

Floorscape in Hanover

The REVIEW has given much attention in the past to the use of changes of texture and materials on the ground to indicate changes of use. Here is a German example of floorscape used not functionally but decoratively, giving the horizontal surface the richness of colour and texture that is usually reserved for vertical surfaces. This decorative pavement, 10, designed by Dr. Heinz Wolff, is on a footpath that runs beside the River Leine, between it and King George Square at Hanover.



10, footpath in Hanover.

Architects for House in the Isle of Wight

James Stirling, 33, studied at Liverpool Univ. School of Arch. and the Association for Town Planning and Regional Research, London. Exchange scholarship to the USA in 1949, worked for Khan & Jacobs, New York; then with James Cubitt & Partners, and Lyons, Israel & Ellis. Competitions include Poole Tech. College and Sheffield Univ. In private practice and part-time teaching at Regent Street Polytechnic.

James Gowan, 34, studied at Glasgow (pre-war) and Kingston (post-war). worked with Brian O'Rorke, Powell & Moya, and Lyons, Israel & Ellis; competition entries include Poole Technical College and Edinburgh Medical Extension. In private practice and teaching at the Architectural Association.

INTELLIGENCE

The 1958 Royal Gold Medal of the RIBA has been awarded to Robert Schofield Morris, a partner in Marani and Morris, of Toronto. Mr. Morris was President of the Royal Architectural Institute of Canada 1952–4; among the firm's most important current buildings are Head Office Building for Shell in Toronto, Toronto branches of both the Bank of Montreal and the Bank of Canada, and a new Science building for New Brunswick University, Fredericton.

ACKNOWLEDGMENTS

The colour blocks on pages 265 and 268 appear by courtesy of John Wright. COVER: Photo Duprat. MARGINALIA, pages 225–226: 1, RIBA; 2, 3, Vincent G. Kling; 4, Asher B. Etkes Associates; 5, 6, J. Moscaldi; 8, Marion Johnson; 9, Franco Carpanelli. OFFICES AT NEWPORT PAGNELL, pages 232–235: 1, Basil Moore; 2–5, Sam Lambert. OFFICES AT BIRMINGHAM, pages 236–239: 1, Galwey, Arphot; 3–5, 8, Birmingham Post. A LITURGICAL BRIEF, pages 240–255: Frontis, 4, 10–13, 15–22, G. E. Kidder Smith; 1, 2, Fernez; 8, Jacques Thevoz; 14, Rene-Jacques. HOUSE IN THE ISLE OF WIGHT, pages 256–260: 1, 4–6, 8–10, Michael Wickham; 2, 3, James Stirling. BANK OF LONDON AND SOUTH AMERICA, pages 263–268: 1, 3, 4, 7, 8, 12, Herbert K. Nolan; 5, 13, 14, Galwey, Arphot; 9, 10, Wainwright. LAMOND OF DUNDEE, pages 269–271: 3, 4, Dundee Public Libraries; remainder, Bernard Wopinski. CURRENT ARCHITECTURE, pages 272–276: Middlesbrough Little Theatre, Stewart Bale. Furniture Shop in Bromley, Toomey, Arphot. Teachers' Training College at Birmingham, Galwey, Arphot. House at Sheffield, Alan Dredge. MISCELLANY, pages 277–282. Exhibitions, 2, 3, Solomon R. Guggenheim Museum; 4, R. B. Fleming and Co. Townscape, Ian Nairn, Arphot. Counter-Attack, 1–4, Ian Nairn, Arphot; 5, Wakefield Express Series Ltd.; 6, Eastern Daily Press; 7, Roads Campaign Council. SKILL, pages 283–294: Vinyl handrails, Marley Tile Co.

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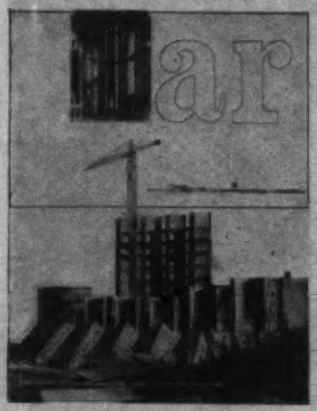

This Month's Cover shows, in model, drawing and progress photographs, the new church of Notre Dame at Royan, France, designed by Guillaume Gillet and his engineer, the late Bernard Laffaille. Though the immediate impact of these illustrations is structural, the church also answers to the new concepts of functional liturgical planning that are discussed in the article beginning on page 240.

225 **Marginalia**

228 **Frontispiece**

229 **Tridon** *by Reyner Banham* Among the architectural texts that have acquired what Mr. Banham calls 'secret society status' Paul Valery's *Eupalinos* is one of the most curious. It is normally read as a high-level exposition of the very essence of architecture, but it really discusses two different and mutually exclusive attitudes. One is that of the *Beaux-Arts*, which Valery understood and seemed to approve, personified by Eupalinos himself; the other is a species of inspired functionalism of which he could have had no experience in the early Twenties when the book was written, but subsequently manifested itself in a new tradition that runs from Moholy-Nagy to Charles Eames, and is epitomized in *Eupalinos* by the figure of Tridon, the Phoenician Shipwright, who broke all the customary rules of behaviour, even those of ship-building.

232 **Offices at Newport Pagnell:** *Architects, Gordon and Ursula Bowyer*

236 **Offices at Birmingham:** *Architect, J. H. D. Madin*

240 **A Liturgical Brief** *by Peter Hammond* For want of a clear grasp of the problems at issue, church architecture is in danger of losing its way in false solutions based on a superficial understanding of the present situation of Christianity in the world. The issues are not concerned with creating shrines to the glory of God, nor inducing moods conducive to a worshipful frame of mind, but in developing a rational approach to the problem of planning for a live and active liturgy adapted to the present state of Christian thought. As the Rev. Peter Hammond points out, it is in those countries where the so-called Liturgical Movement is strongest; in its claims for a more active participation by the congregation in the rites of the church, that ecclesiastical design is currently in its most flourishing condition, because the existence of a live liturgy gives the architect a clear brief to direct his work. In England, where the movement has—as yet—little influence, it may require the architect to demand from his clients clear liturgical guidance, an approach that has just begun both to appear, and to promise more stimulating designs than have been produced here so far.

256 **House in the Isle of Wight:** *Architects, James Stirling and James Gowan*

261 **Interior Design** The inception, in this issue, of a regular supplement devoted to problems and achievements of interior design, is not an alteration of policy on the part of the ARCHITECTURAL REVIEW, but the filling-out of a complete coverage of building design in all its aspects. It is also a plea for a more open-minded approach to the problem of interior design in general, seeing it neither as something absolutely within the architect's control, nor as something entirely outside his responsibility, but rather as a field of expert, integrated, sympathetic consultancy, like structural engineering.

263 **Interiors: Bank of London and South America:** *Architect, John Wright*

269 **Lamond of Dundee** *by D. M. Walker* The prestige of Mackintosh, and thus of Glasgow, has so overshadowed other progressive architecture of the period in Scotland, that the contribution of other architects and other towns has been overlooked. In this article Mr. Walker attempts to characterize and evaluate the work of William Gillespie Lamond, who worked in various Dundee offices from the mid-nineties almost to the first World War, and left the stamp of his very personal style—derived more from London than from Glasgow—on a number of buildings in the area.

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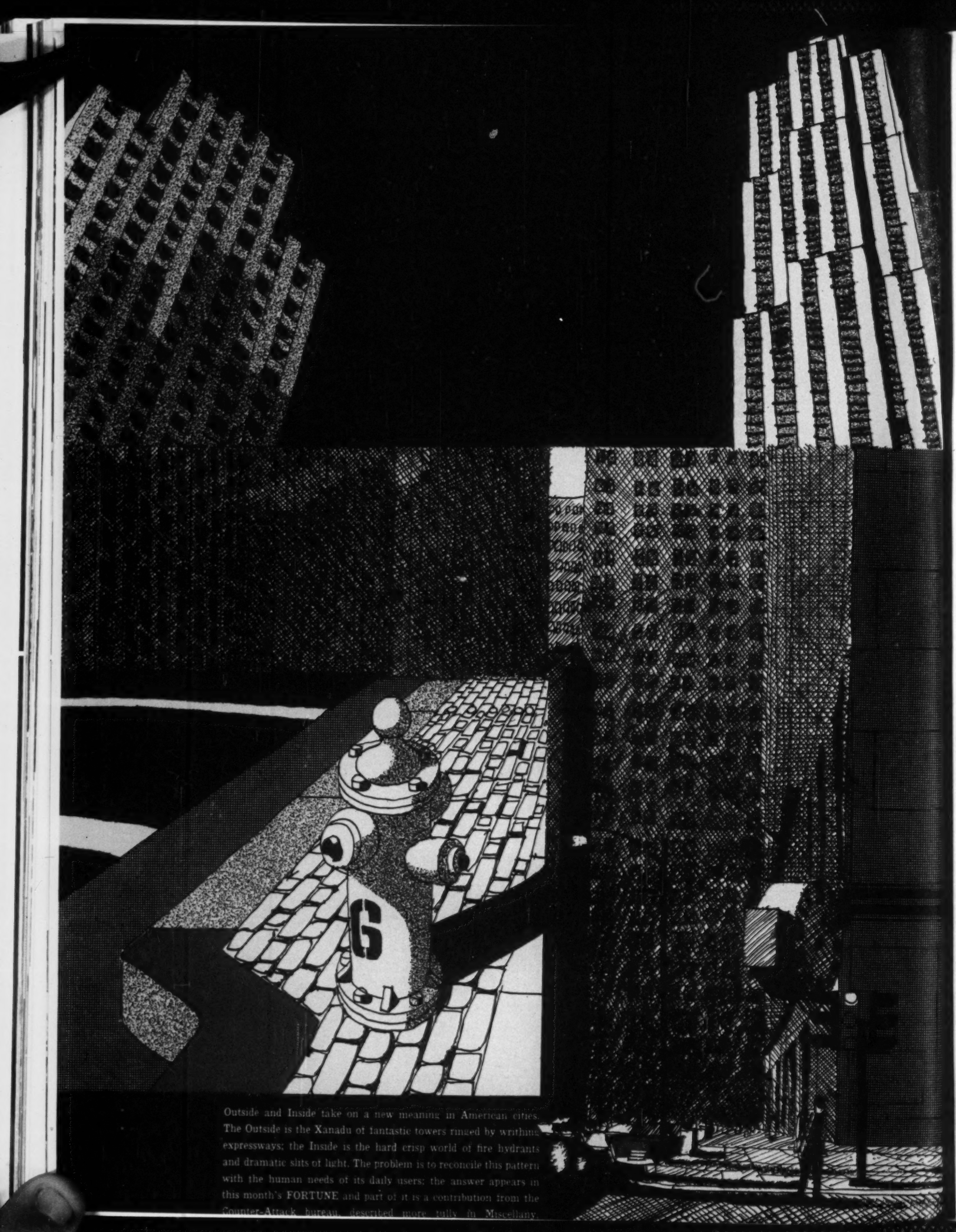


Outside and Inside take on a new meaning in American cities. The Outside is the Xanadu of fantastic towers ringed by writhing expressways; the Inside is the hard crisp world of fire hydrants and dramatic slits of light. The problem is to reconcile this pattern with the human needs of its daily users: the answer appears in this month's FORTUNE and part of it is a contribution from the Counter-Attack bureau, described more fully in Miscellany.

Reyner Banham

TRIDON

Some books acquire the reputation of distilling the very essence of a mental discipline, and Paul Valéry's Eupalinos, ou l'Architecte *is often supposed to have done this for architecture. But Reyner Banham suggests that all it can truly be said to have distilled is the personality of an ideal academic architect—except for one passage where it anticipates almost, irrelevantly to its main argument, the character of a truly progressive designer of the 'Fifties, a remarkable feat for an author writing at the time of Le Corbusier's earliest books and the pioneer phase of the Bauhaus.*

In the focal zone of any conscientiously elevated discussion of architecture as a noble discipline of the mind (rather than a technique of designing buildings) one can almost always find a disputant who claims apostolic status on the grounds that he has read *Eupalinos, ou l'Architecte*. If he has indeed read it, then he is a lucky or a diligent student, for this short book of Paul Valéry's is not easy to come by in its entirety in the original French, and Professor Stewart's dignified English translation has never been issued in an edition of more than seven-hundred-odd copies. Thus the Eupalinides would be a select clan in any case, but, in addition, like the admirers of say *Hubert's Arthur* or even *The World of Null-A*, they seem possessed of an almost Rosicrucian mystique, recognize one another afar off, and converse in an initiated short-hand that impresses where it does not illuminate.

Like all books that attain this secret-society status, *Eupalinos* possesses, in addition to sheer physical rarity, pronounced qualities of literary oddity. It is not by any means the first attempt to imitate Plato's 'Socratic Dialogues,' in which philosophical concepts are expounded by the mutual abrasion of incompatible minds, nor is it unique in its time. But it must surely be the only one in which any of the original disputants are set posthumously in the Twentieth Century, for the dialectical exchanges of *Eupalinos* are bandied to and fro on the banks of Styx, between the shade of Socrates and that of a slightly more recently deceased acquaintance. And even without a gratuitous reference to Stephane Mallarmé and, apparently, to the mathematician Henri Poincaré, the reader would still sense that every turn of phrase and nuance of meaning is two-and-a-half millenia more sophisticated than Plato's. Valéry's Socrates has been brooding and festering in Hades for the whole Christian epoch and more. No longer the old chop-logick whose integrity could not be doubted even by himself, his disgruntled shade is consumed by self-pity and corroded by the cynicism of a disappointed *Membre de l'Institut*, declaring that only the monstrous injustice of his death has ensured his opinions credence and remembrance.

This is hardly the stuff of which a compelling architectonic mystique could be made, but the worst of Socrates' shade is not revealed until after Eupalinos, the architect, has been dismissed from the argument. He does not enter it, as one might have expected, as the other interlocutor—that unrewarding function of Socratic stooge, the straight man who feeds the sage with leading questions and gasps of admiration, is performed by the shade of Phaedrus, who introduces Eupalinos into the discussion on two separate counts; firstly as a reasonable man in order to show that reason has a part even in the irrational desire to create immortal monuments; and, secondly, to demonstrate something that Plato holds inconceivable—that men of sound intellectual fibre could yet be attached to the world of tangible and visible forms.

Eupalinos thus appears as a man equipped with virtues that stand an architect in good stead—reason and visual sensibility. But he has additional virtues; he lives for his art—

> . . . the more I meditate on my art, the more I practise it; the more I think and act, the more I suffer and rejoice as an architect; and the more I feel my own being with an ever surer delight and clarity.

I go astray in my long spells of waiting.

He attends to its niceties, for Phaedrus remembers

> imperceptible modulations . . . insensible curves, minute and powerful inflexions . . . which he introduced and concealed.

He has picked up from some clairvoyant reading in Choisy, as yet unpublished for another twenty-three centuries, not only the habit of speaking in two-edged aphorisms . . .

Il n'y a point de détails dans l'exécution.

but also a care for things like damp-courses, for he

> ordered small laths to be cut following the grain of the wood, so that, when placed between the masonry and the beams that rested thereon, they should prevent the damp from rising. . . .

Eupalinos, take him all round, looks like a model Beaux-Arts product, finnicky, intellectual, practical in an unadventurous way, and with a clear sense of his place in the world, for he kept his hands clean on the site, and this to Socrates was his crowning glory.

P. He gave them nothing but commands and figures.

S. That is the very way of God.

One can well imagine how this paragon of shining rectitude might appear as the prototype of a race of dedicated architects, but it must also be recognized that he had the countervailing vices of his type: priggishness and sentimentality . . .

> This delicate temple, none know it, is the mathematical image of a girl of Corinth, whom I happily loved. It

reproduces faithfully proportions that were particularly hers

snobbery, in classing buildings with a predominantly functional intention, below 'edifices of art alone,' and hard-cored academicism . . .

> What is important for me above all else is to obtain from *that which is going to be*, that it should with all the vigour of its newness satisfy the reasonable demands of *that which has been*. How can one help being obscure?

Obscure? Surely not. In France particularly, the long uphill battle waged by progressive artists and architects against the *Salon* and the *Ecole*, would have rendered this quintessential statement of Academic aims as clear as it was familiar: the new shall be subject to the old.

The academic intention of the work as a whole is further underlined by the two topics that follow. The first is an extended ('we have all eternity in which to discourse') demonstration of that well-worn academic theme, the equivalence of architecture and music, and the other topic is too involved, and yet too obvious, to require discussion here—it treats, roughly, of the 'need' to select only those qualities of one's materials that are relevant to the purpose immediately in hand, but this topic is introduced by a short Socratic anecdote that is crucial to an understanding of just where, and how, *Eupalinos* fails as a text for twentieth-century architects.

The Sage sets out to explain to Phaedrus why—out of all the possibilities open to his talents as a young man—he did not choose to develop those that might have made him an architect, and the explanation hinges upon the fundamental and chronic failing of all academic thought—the inability to accept or assimilate whatever will not 'satisfy the reasonable demands of that which has been' by not conforming to any of the accepted categories of classification. Socrates relates that he was walking on the sea-shore one day when he chanced upon an object that he could not then categorize, and still (two-and-a-half millenia later) could not properly describe to Phaedrus, and so upset was he by its unclassifiability that he hurled it back into the Aegean and ran from the shore in panic. Yet the object that Valéry puts into his hands as an image of inscrutability is all-too-scrutable to us.

> It was a white thing of the most pure whiteness; polished and hard and smooth and light . . . perhaps some fish-bone weirdly worn . . . a piece of ivory carved for I know not what purpose . . . a fragment of rock.

Three decades after *Eupalinos* it is almost impossible for us to visualize the object in Socrates' hand as anything but a Moore, a Hepworth, an Arp or a Brancusi. Between then and now, we have passed through an age when the Surrealists insisted that found objects be interpreted, not chucked back in the sea, but Valéry's choice of the wrong image cannot be excused on the grounds that the situation has changed since he wrote this passage, for, in 1923, the object could already have been a Brancusi; the *Bird in Space*, or the *Newly-born*, would answer most of the attributes of the Socrates-baffler.

While there were very specific reasons why Valéry was unlikely ever to see virtue in abstract art as such, reasons to which we must turn in due course, there was a more general reason why he was unlikely to accept any of the stirrings of progressive thought of the early Twenties. He seems to have had an exclusive, not inclusive mind, like the one with which he endows Socrates, capable only of assimilating those things that he could pigeon-hole into existing categories. The innovations of his own time that Valéry was quickest to accept were those that merely extended the analytical or symbolical capacities of established modes of expression, such as French, mathematics, or classical architecture.

In the view which is currently entertained of the development of classical thought, abstract art is usually seen as one of its inevitable end-products, but, in historical fact, it required considerable and arbitrary acts of will to bend it in that particular direction, and Valéry was not of that party. His view of the mathematical destiny of design was the exact opposite of theirs, and those who rashly adduce Valéry as one of the justificatory authorities for mathematical abstract art, should bear in mind not only Socrates' act of rejection on the seashore, but also this passage from his *Introduction à la Méthode de Leonardo da Vinci*

> In art there is a word that applies to all styles and all fancies, and at one stroke dismisses all the pretended difficulties with regard to the opposition or relationship between art and that 'nature' which for good reasons, is never defined: the word is *ornament*.
>
> The ornamental conception is to the individual arts what mathematics is to the other sciences. . . .

Valéry, on this showing, is unlikely to have anything of real interest to say to the architects of the Twentieth Century when he speaks with his Eupalinoid or Socratic voices, but *Eupalinos, ou l'Architecte* has an inexplicable saving grace (though strict Eupalinides probably don't see it that way) an unresolved interruption in the argument that in some ways resembles the boozy and bloody-minded irruption of Alcibiades in the *Symposium*, but with far less benefit to Socrates. Phaedrus is a cut above the ordinary run of Socratic feed: his mind, not yet boxed-in by the fixed professional disciplines of architecture or dialectics, is capable of appreciating other kinds of creative personalities besides the Eupalinoid, and in order to prove some point about theory and practice that Valéry will not let Socrates allow him to prove, he introduces the character of Tridon the shipwright, a mysterious and unscrupulous go-getter, whose life appears to have been dedicated to wine, women and seafaring, who

> never ceased from pondering upon the problem of navigation . . . his busy daemon urged him on to make the best ships whose keel ever cut wave. And whereas his rivals remained content to imitate the models then in use, he, Tridon the Sidonian, ceasing not to fathom the unexplored regions of his art, breaking up the petrified combinations of ideas and taking up things at their source . . .

Tridon is thus a radical, as well as a roughneck; his aim is root and branch knowledge of his own subject, and of any other that comes within hailing distance of it . . .

> he was provided with the profoundest and most delicate ears ever owned by skull of man. All that penetrated those bushy labyrinths fell a prey to a monster of portentous greed. . . . I know not how many languages, how many recipes it had digested. What a variety of wisdoms it had transmuted. . . .

and he was a functionalist of the most dynamic, yet imaginative kind.

> He thought that a ship should, in some sort, be created by the knowledge of the sea, and should almost be fashioned by the wave itself . . . he would speak with the abundance of a poet of the tunnies and porpoises, amid whose gambols he had lived so long.

Phaedrus is nowhere made to record that Eupalinos applied himself in this abandoned and productive manner to problems of site organization or the theory of structures: his nights, apparently, were spent in devising means of concealing about his temple proportions peculiar to a girl of Corinth. He appears, too, to have imitated the models then in use, and his knowledge of the technicalities of building appears to have been limited to ready-made recipes. But old tricks of his own trade do not seem to have appealed to the Sidonian shipwright, and while Eupalinos might have held converse with philosophers in order to discover some unifying *rationale* underlying these tricks, Tridon sat in on their seminars in search of new tricks and practical devices from other people's trades.

> A saying of Pythagoras, a precept and a number remembered from Thales, if some planet shows, and if your self-possession has not left you, may well lead you back to life.

The contrast that Phaedrus draws

between the two men is total and complete. There is nothing priggish or sentimental related of Tridon: he is depicted as a notorious debauchee, his wife kept a pub in the Piraeus and he applied his functional philosophy to morality as well as everything else.

> Even vice and virtue were for him occupations which have their special reasons and graces, and which are practised as circumstances demand.

Valéry, indeed, has Phaedrus go to some length to establish him as an astute and good-humoured roustabout, hard-pawed and foul-mouthed, insatiably inquisitive, always in search of technical excellence, but unhampered by ideals, a disrespecter of persons, conventions and categories, *rusé* and case-hardened by long acquaintance with the sea.

It is a rousing portrait of an extreme kind of creative genius, and though Valéry seems capable of observing and—to some extent—illuminating its activity, he cannot let Socrates comprehend it. The Sage is made once to commend Tridon for his contempt of ready-made ideas (but not to condemn Eupalinos for accepting them) but he also describes him as a 'rascal' and an 'Octopus,' and neither he, nor even Phaedrus, is allowed to conceive that the Sidonian, with his unorthodox approach, could be an entirely successful shipwright.

S. Did Tridon at least turn out anything really good?

P. Some marvels of seaworthiness; some others, no doubt, are at the bottom.

'No Doubt' is, notoriously, a phrase that confirms the uncertainty it affects to deny; Phaedrus does not know for certain if any of Tridon's products have foundered, but it is inconceivable to him that the luck of the Ocean should run as strongly in his favour as it did to other shipwrights. This is a curiously unconvincing passage; how could a man-about-Piraeus, such as Phaedrus gives himself out to be, remain ignorant of the professional reputation of so egregious a character? Yet all Phaedrus can offer is 'No doubt.' Either Valéry is trying to bluff his way past a nasty hole in his argument, or his attention is wandering.

In any case, it is clear that having let Tridon in, Valéry is stuck for a device to get him out, and within a few lines of the question of seaworthiness, he simply shuts him out of the discussion by having Socrates execute a classic Freudian ploy for attracting sympathy, by countering a description of one of Tridon's ships in full sail, with a self-pitying

> O Life . . . And for me, the black, loose-flapping sails of the vessel with its load of priests, which as it laboured back from Delos, dragging on its oars . . .

Tridon may have been shut out of the dialogue, but not out of the reader's mind. Valéry might have pulled off this crude manœuvre in 1923, when even the established radicals in French architecture —Perret and Garnier—were turning Eupalinoid, and the Tridonian type was unknown outside the ranks of engineers such as Eiffel, Panhard or the pioneers of aviation. But in the year that *Eupalinos* was committed to print, the modern movement in architecture acquired its first true Tridonian in Moholy-Nagy—a practical manipulator of things and concepts, a constant seeker after technical excellence and the ideas of philosophers, an experimenter, no prig, a demolisher of conventional systems. Since Moholy joined the Bauhaus, his type has become more familiar to us over the years, and reaches a position of curious eminence today in the person of an outstanding frequenter of sages in search of operational wisdom (as those who have seen the credit-titles of *A Communications Primer* can testify)—Charles Eames, of whom Phaedrus might have been speaking when he said

> . . . no mortal more various in his means, more knowing in artifices; more inquisitive about all that did not concern him, more cunning in making it serve for what did concern him . . . he viewed all affairs solely in the light of practices and processes.

Eupalinos could only prevail over Tridon today in Academic circles; the rest of us have drastically overhauled our standards for a desirable operational personality, and with them our concept of a universal mind.

The phrase *Uomo Universale* gets a good deal of exercise nowadays, and it usually stands for someone like Leonardo da Vinci. Tridon is not a universal mind of that type, as Eupalinos appears to have been. Valéry himself seems confused on this point, and makes Phaedrus speak of Tridon in terms that recall passages from Leonardo's notebooks, while in the *Introduction* he tries to equate Leonardo's Method with that of the eminent Tridonian, Michael Faraday. But this will not stick: even on Valéry's showing Leonardo was—as we know Faraday, and may presume Tridon, not to have been—a mind crippled in the faculty of compassion, a will maimed in the organs of creation. Valéry notes with approval Leonardo's cerebral curiosity and epicene disgust at the act of love, and hails him as the leading player in that

> Intellectual Comedy which . . . would be so much more precious a thing than the Comédie Humaine, or even the Divina Commedia

. . . a role for which Tridon is manifestly unfitted.

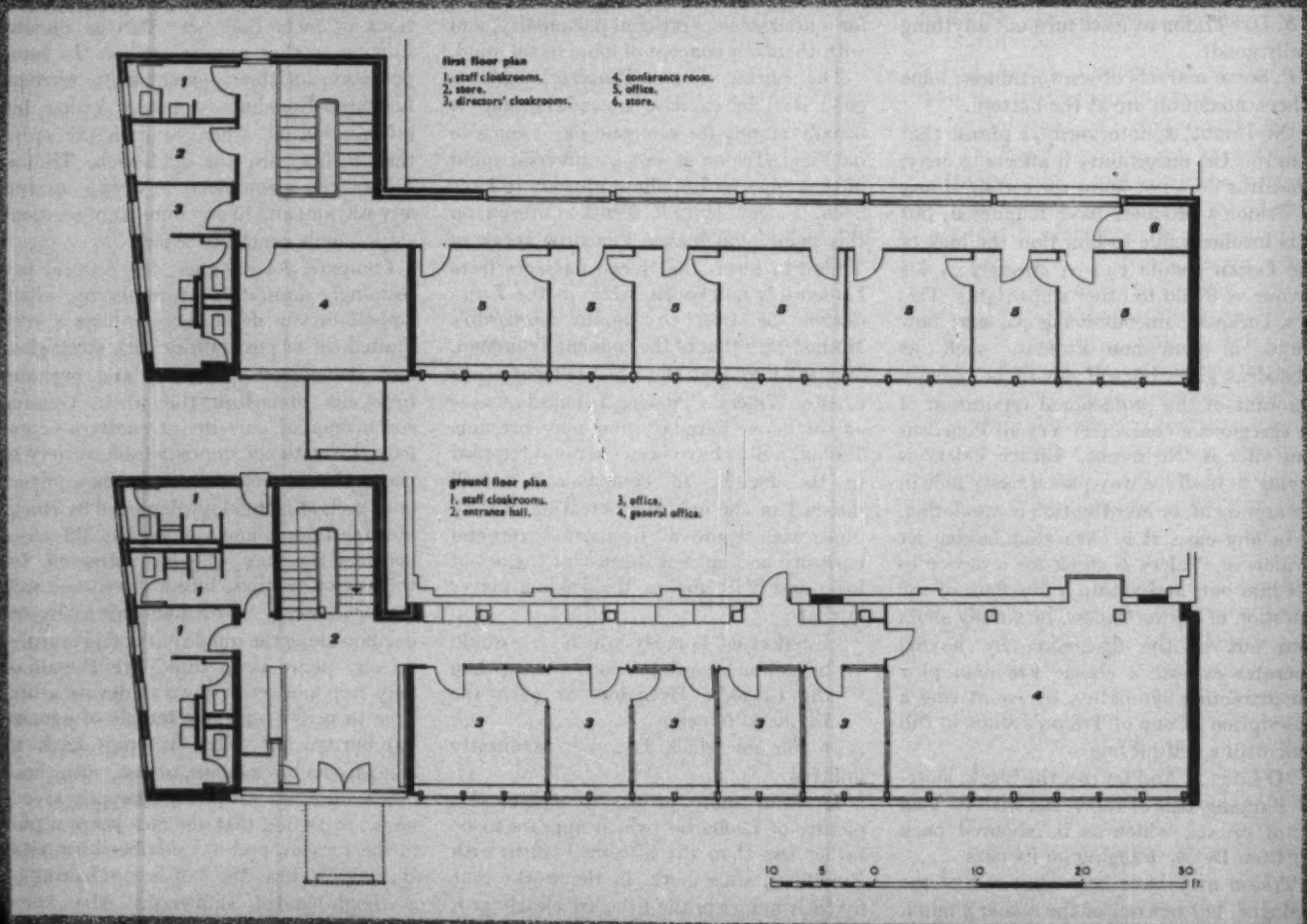
It seems quite proper to equate this picture of Leonardo (which appears to be rather less than the historical truth) with Eupalinos, since both, in the works that fly their names in the title, are clearly projections of the author himself, and the Method that he attributes to the one seems equally applicable to the other: it is a method of systematic exclusion and its universality is limited to a comprehension of an abstract diagram, the classes and scales of measurement into which things and processes can be fitted, not the things and the processes themselves—it is quite characteristic of Leonardo that he should have correctly designed an apparatus for converting human muscle-power into wing-flapping action, but not have first ascertained whether or not the available power was sufficient to lift a man's weight from the ground. Leonardo's universality embraces only the filing system that held the rather limited body of known facts available in the early *Cinquecento;* it is tidy, exclusive, closed and subjective.

We tend to require our universal minds nowadays to be open, inclusive and objective, even at the risk of appearing untidy. Our characteristic types of genius tend to be unprejudiced catch-alls of anything and everything they can hold, unfiltered and as found. Their claim to universality is about as good or as bad as Leonardo's, but their contents are very differently organized. Whereas his was organized by a thin spiderweb of theory, regular and geometrical of aspect, running continuously and permanently between the facts, ours is inclined to be organized into promiscuous and temporary aggregations of facts that are often as discontinuous as they appear random. In compensation for this apparent mess, whereas Leonardo-Eupalinos can only utilize his information as, where, and in the order that it fits into the spiderweb, Tridon-Eames can assemble it any way up and any way on, and in any number of relationships, commensurable or not.

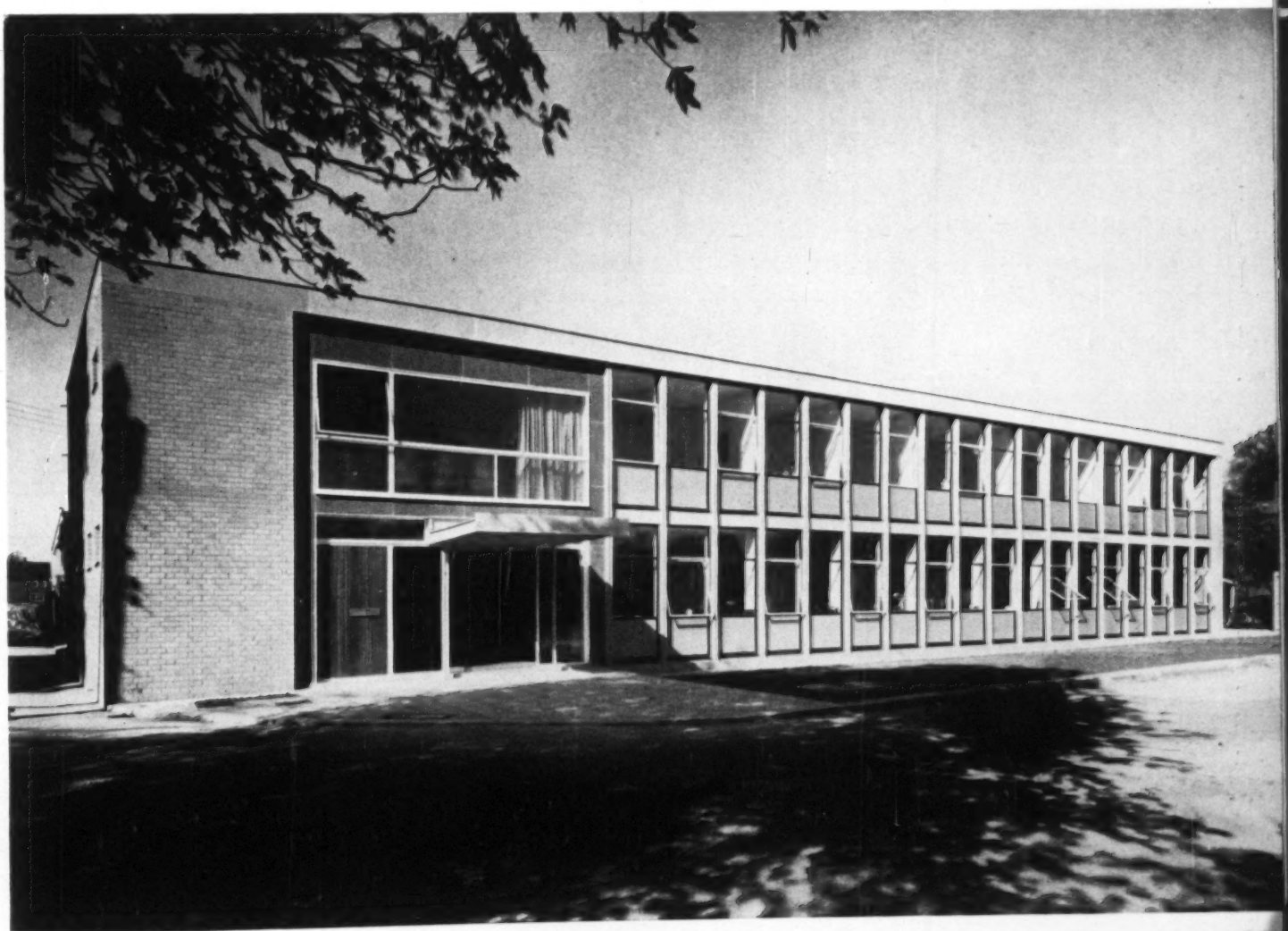
Compare, for instance, the pellucid but seemingly immutable formula by which Eupalinos van der Rohe organizes a very limited set of possibilities with steel, glass and elementary geometry, and excludes from his procedure the whole teeming cornucopia of current alternatives—compare this with the unpredictable variety of materials and geometries, coverings, joiners and levels of technology deployed by Buckminster Tridon, and you see the difference between the man who has retreated, for this reason or that, into a paved and well kept cul-de-sac, and a man driven by his daemon along the jungle path of adventure. At any point along that path Eupalinos may stop and settle down to devote a lifetime to perfecting some temple of agonizing purity, but when he steps back to compare its proportions, at last, with those of a Corinthian girl he once happily loved, he is apt to find that she now keeps a pub in the Piraeus, and has sacrificed her vital statistics to bear the half-bred offspring of a rough-handed shipwright who knew something better to do at nights than think about architecture.

OFFICES AT NEWPORT PAGNELL

ARCHITECTS | **GORDON AND URSULA BOWYER**



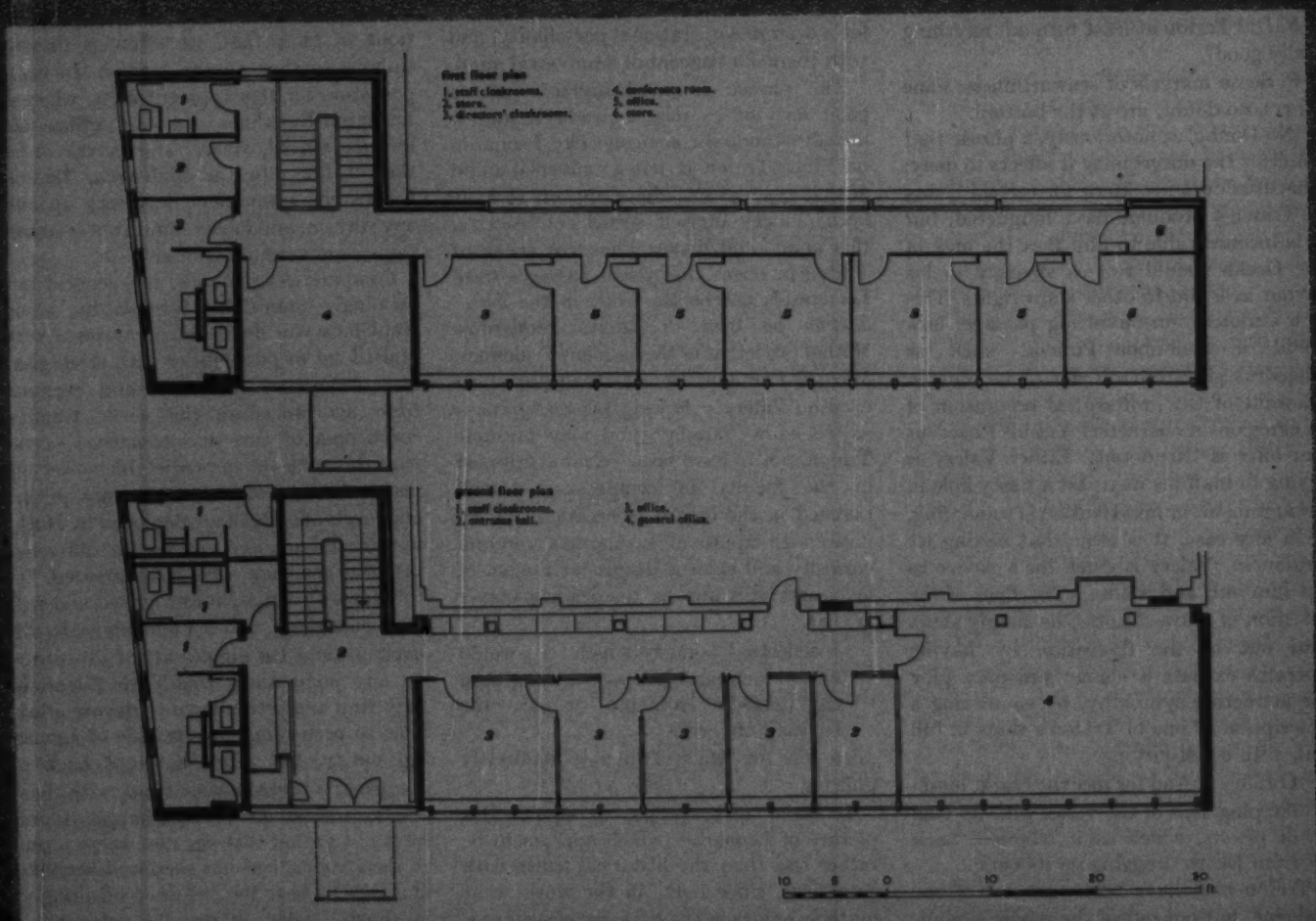
The building houses the administrative staff of a small works carrying out the servicing of precision machines manufactured by the parent company—Société Genevoise Ltd.—in Switzerland, and is on the outskirts of Newport Pagnell. The offices are connected to the existing works at the rear but have been kept structurally independent in order not to disturb production during the construction period. Accommodation is planned on two floors with offices to one side of the entrance hall and staircase and cloakrooms on the other. General offices are arranged on the ground floor and directors with their private secretaries above with a small conference room over the entrance hall. The structural mullions in the offices are spaced at four-foot centres to allow for a flexible partition layout. Directors' offices are generally three bays wide (12 ft.) and secretaries' two bays (8 ft.) with general offices of varying sizes. Structurally, a combination of load-bearing brickwork and r.c. columns is used with post-tensioned precast concrete mullions on the entrance façade. Floors and roof are of prestressed concrete beams giving an unbroken ceiling to all offices and spanning from front to back. The staircase is formed from precast concrete treads cantilevered out from the fairfaced brick walls in the entrance hall. Externally, a pale cream facing brick is used and the precast concrete work has an off-white aggregate with an acid finish. The facing slabs around the entrance and conference room window are of slate and the panel at the side of the entrance doors is faced with teak strips. The infilling panels below cill level in the offices are of pale blue glass and the cills internally are of precast concrete coloured dark grey. Internally, all offices have acoustic tile ceilings with cork tiles on the first floor and lino tiles on the ground floor except in the entrance hall where terrazzo is used. Services are generally concealed and floor ducts are provided for the telephone installation. The mural in the entrance hall which incorporates a number of the client's machines is by Henry and Joyce Collins.



1. general view of entrance façade.

OFFICES AT NEWPORT PAGNELL

ARCHITECTS | **GORDON AND URSULA BOWYER**



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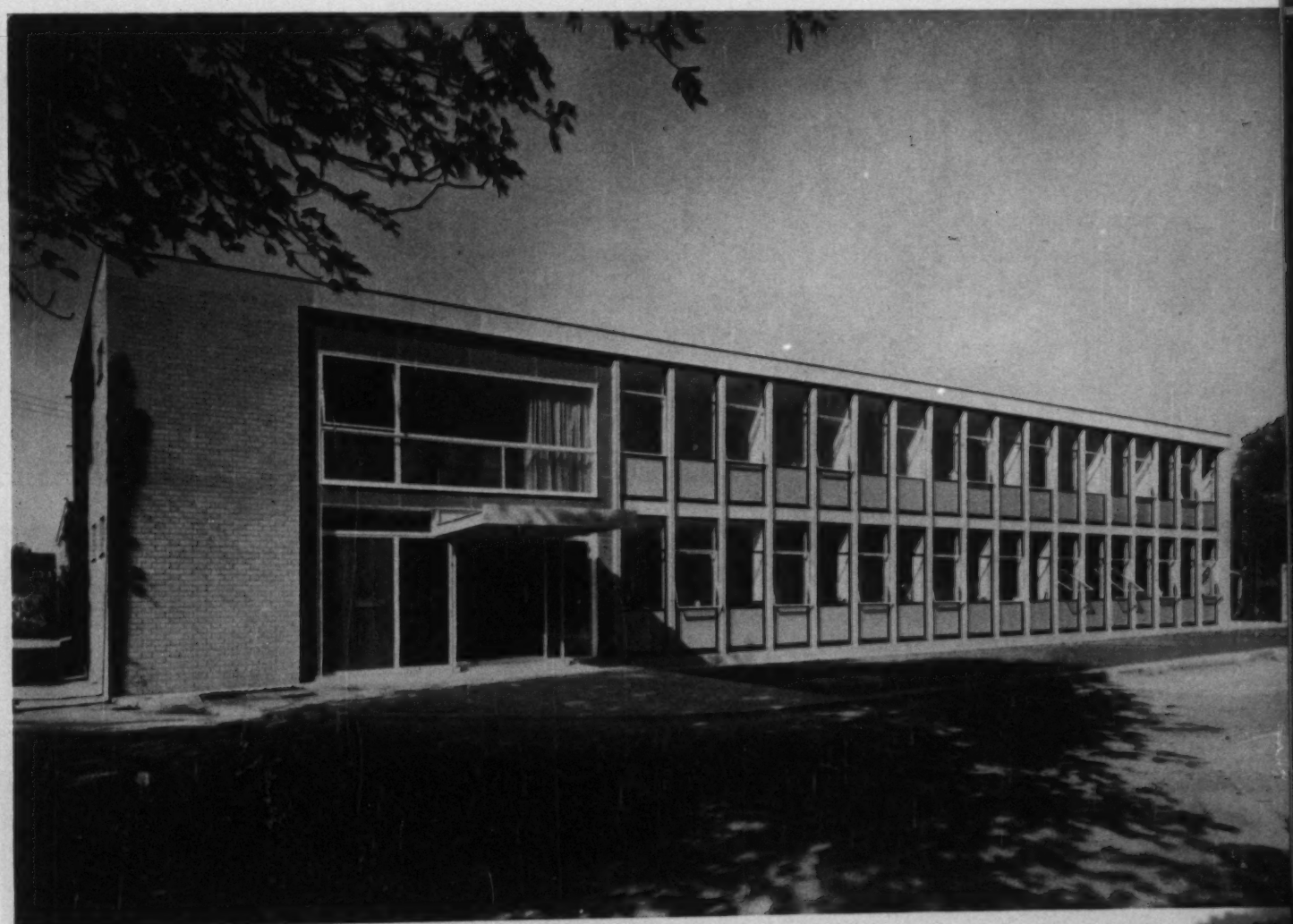

1, general view of entrance façade.

2. staircase from above. The fairfaced brickwork is a pale cream and the pre-cast concrete cantilevered stair treads, which are dark grey, have a 9 in. bearing in the brickwork and are spaced to conform to the brick courses and joints. The balustrade is formed from veneered blockboard supported on tubular metal rods.

3. detail of main entrance. The conference room window above has a projecting aluminium angle frame and the surrounding facing slabs are of slate. The r.c. entrance canopy, fascia and edge beams are faced with pre-cast concrete slabs with an off-white aggregate and acid finish, while the panel at the side of the entrance doors is faced with teak strips.

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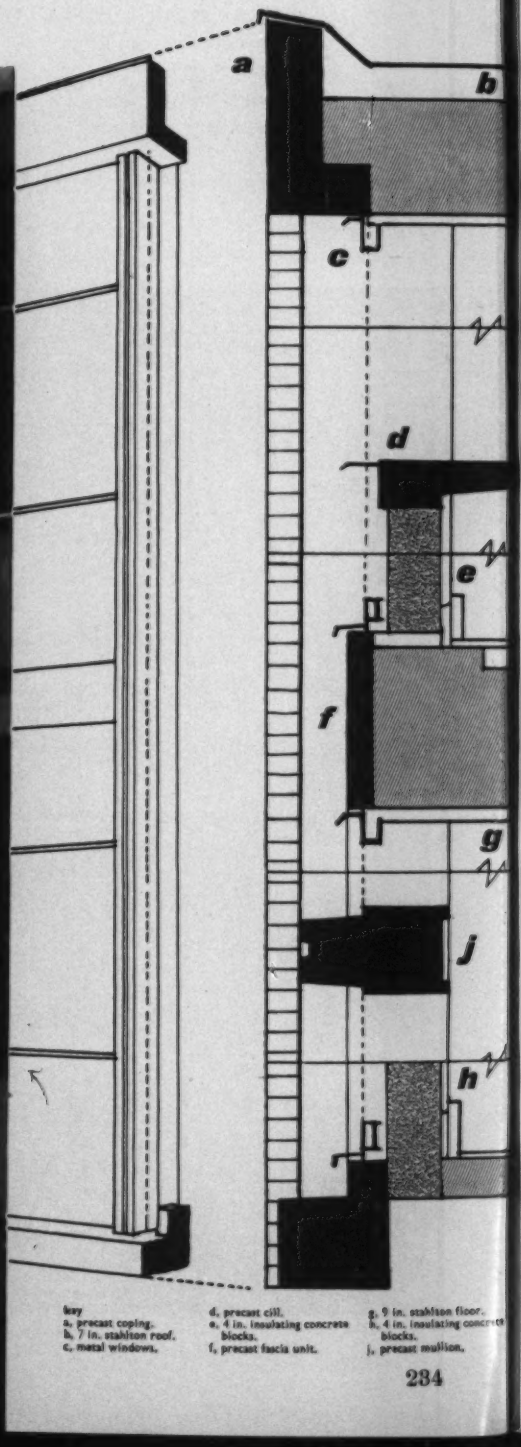
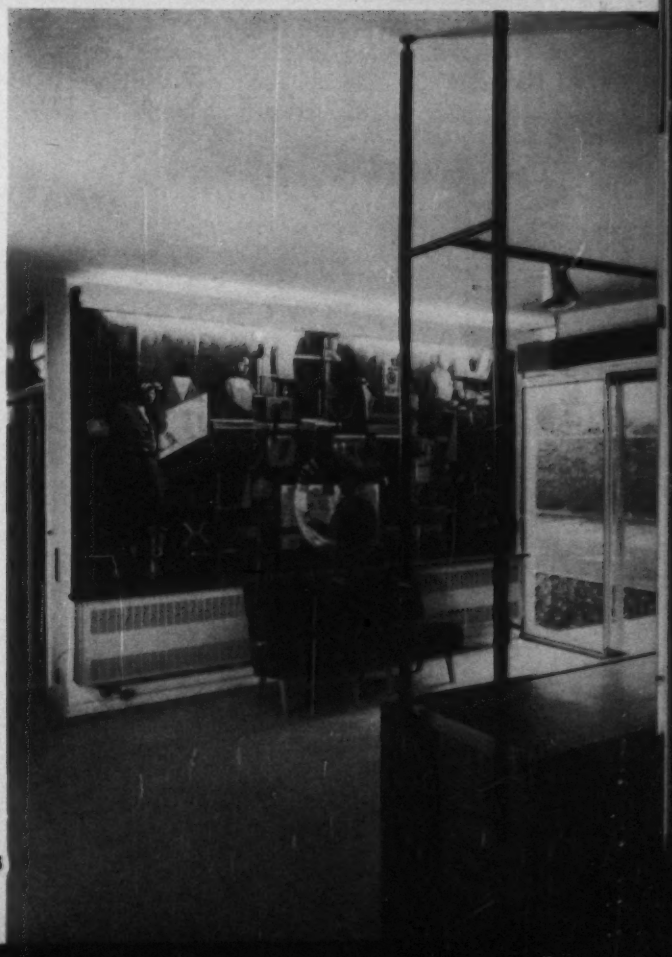


4

key
a, precast coping.
b, 7 in. stahlton roof.
c, metal windows.
d, precast cill.
e, 4 in. insulating concrete blocks.
f, precast fascia unit.
g, 9 in. stahlton floor.
h, 4 in. insulating concrete blocks.
j, precast mullion.

4

4, entrance hall from the foot of the stairs. The reception desk on the right is veneered in teak and birch with a black lino top. The wall behind the desk is olive green, the ceiling white and the floor is of pale grey terrazzo tiles.
5, entrance hall from behind reception desk. The mural, which was carried out by Henry and Joyce Collins, incorporates some of the machines serviced by the clients. It is painted largely in varying tones of grey with small areas of intense blue.



5

OFFICES AT NEWPORT PAGNELL

OFFICES AT BIRMINGHAM

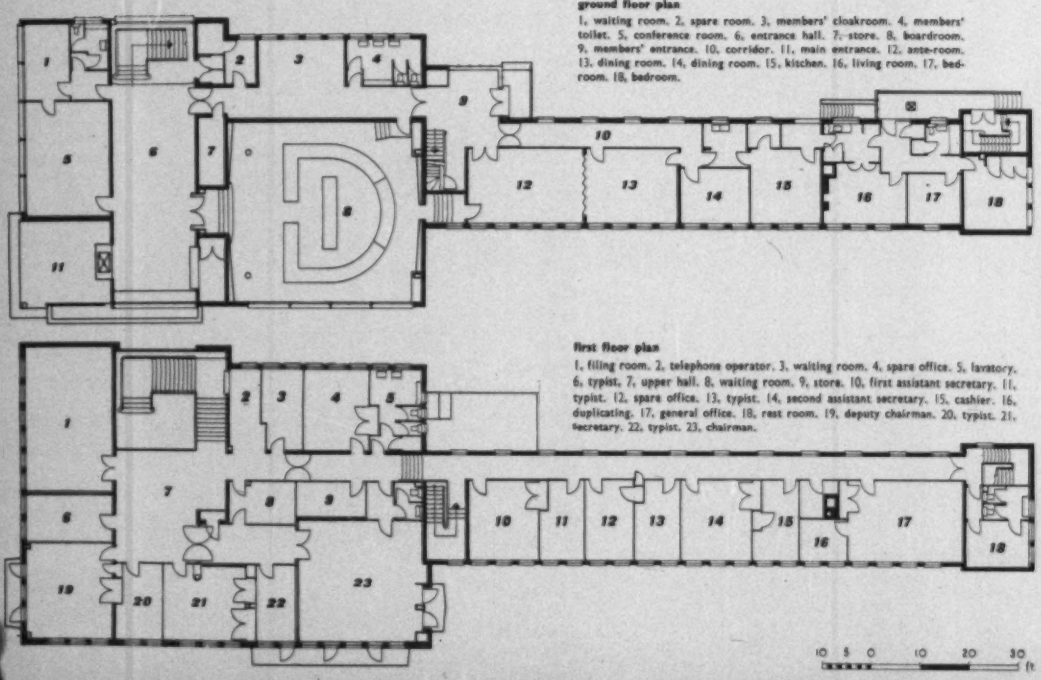
ARCHITECT | **JOHN H. D. MADIN**

These offices are for the Engineering and Allied Employers' Association and are planned on a long, narrow site on the corner of Frederick Road and St. James's Road, Edgbaston. Two houses originally occupied the plot, but these were bombed in the war. The building was planned in two units, each of two storeys, and arranged along the length of the site facing St. James's Road, so that most rooms and offices would face south. Corridors, cloakrooms and lavatories are mainly arranged on the north side of the building, linking a separate entrance for members, one for office staff, and a kitchen and tradesmen's entrance.

The units are of different construction, the main block nearest to Frederick Road having a r.c. frame with in-situ r.c. floors and roof, and exterior brick infill panels clad with a veneer of Roman travertine, with the grain in alternate slabs running horizontally and vertically. The double-glazed windows are set in surrounds of green Westmorland slate and the steel opening frames are painted white outlined with Corsican red. The inner reveals to windows of the main block have also been painted red to contrast with the cream of the travertine, and the reveals of the subsidiary block windows chrome yellow. The subsidiary block which faces St. James's Road is of brick load-bearing construction and in-situ r.c. floors and roof. The roofs of both blocks have been insulated with a thick layer of cellular concrete. The rainwater pipes to the main block are taken down in the centre of the building. The subsidiary block has brown buff brickwork with cream pointing: the window openings are accentuated by projecting green Westmorland slate surrounds.

The entrance of the main building faces Frederick Road, and is approached through armour-plate glass doors beneath a canopy, shielded on one side by a green marble panel with black and white markings, pierced with diamond-shaped holes lined with white marble. The other flanking wall of the porch is finished in cream travertine and the ceiling is of textured plaster painted a deep crimson. The floor of the vestibule is in grey terrazzo divided up with white plastic strips, while the entrance hall has a floor finish of grey rubber tiles with 18-in. white lacing strips, the pattern of which links with that of the vestibule. The main boardroom was planned around the horseshoe-shaped boardroom table. The walls at either end are panelled with sycamore slats running vertically from floor to ceiling; the sycamore has been moulded and cut back at the edges to improve the acoustics of the room, and is backed by a thick acoustic blanket; set in the panelling at the further end, and framing the head of the horseshoe table, is a large black leather panel, bounded by brass margins and set in an outer frame of Australian walnut; this panel has been arranged so that the centre section forms a door giving access to the members' anteroom beyond.

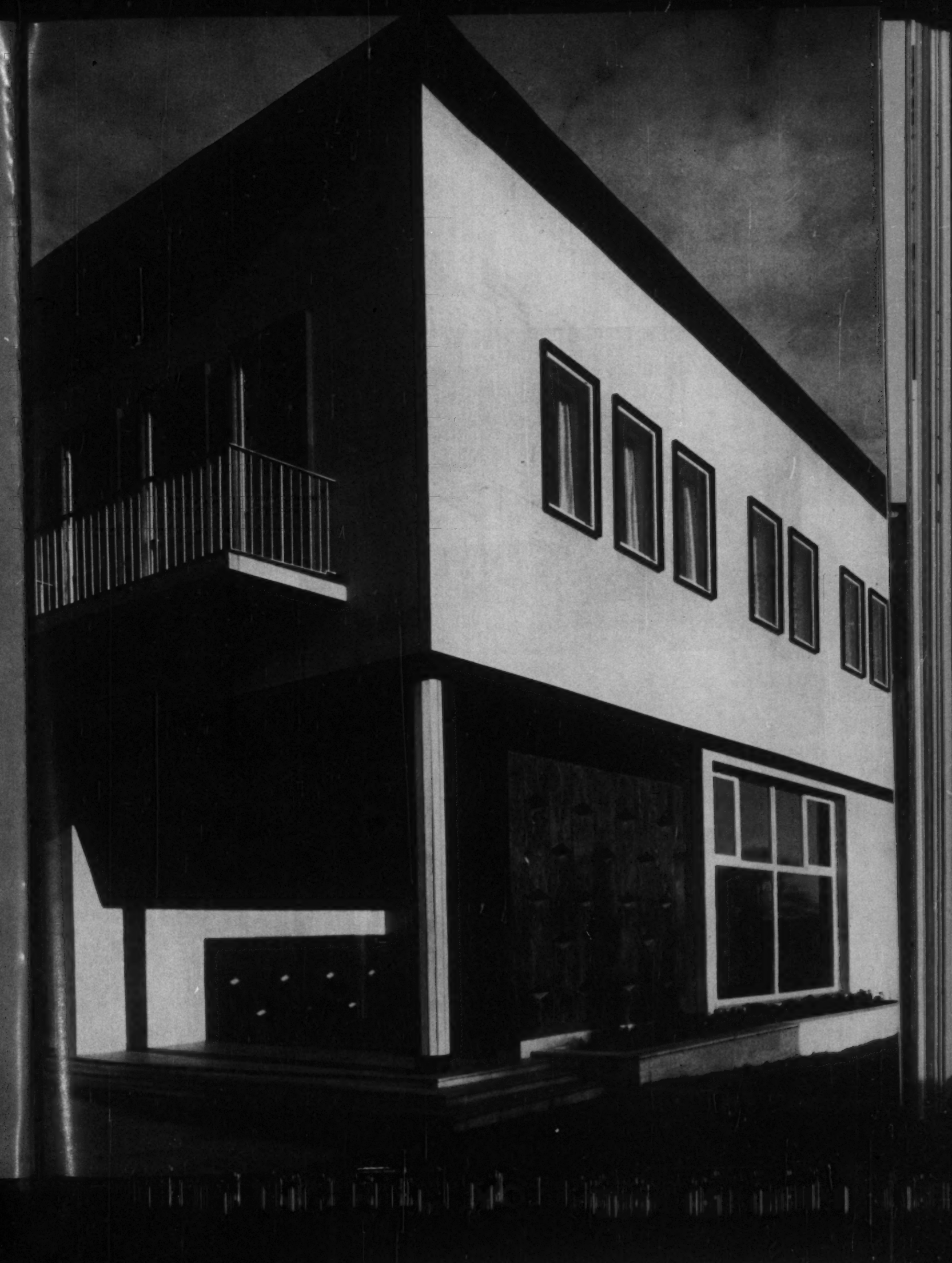
Heating is by a fully automatic oil-fired boiler, which works a system of radiant type flush panels in the greater part of the building, and this heat generated by the boiler is also used to operate a warmed-air system to certain rooms and also provide domestic hot water.



ground floor plan
1, waiting room. 2, spare room. 3, members' cloakroom. 4, members' toilet. 5, conference room. 6, entrance hall. 7, store. 8, boardroom. 9, members' entrance. 10, corridor. 11, main entrance. 12, ante-room. 13, dining room. 14, dining room. 15, kitchen. 16, living room. 17, bedroom. 18, bedroom.

first floor plan
1, filing room. 2, telephone operator. 3, waiting room. 4, spare office. 5, lavatory. 6, typist. 7, upper hall. 8, waiting room. 9, store. 10, first assistant secretary. 11, typist. 12, spare office. 13, typist. 14, second assistant secretary. 15, cashier. 16, duplicating. 17, general office. 18, rest room. 19, deputy chairman. 20, typist. 21, secretary. 22, typist. 23, chairman.

1, Frederick Road entrance of main building. On the right of the entrance is a pierced panel of green marble; the left hand wall is travertine, the ceiling is scarlet.



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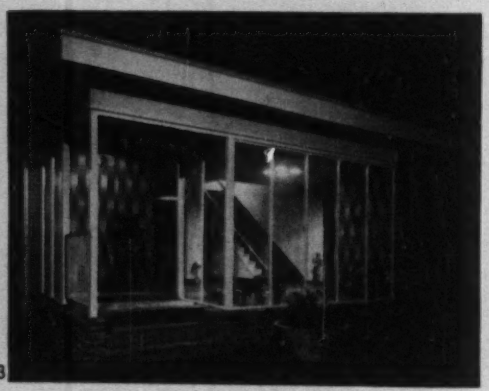
2, main building from the south west. The first floor is faced with travertine, alternate slabs having the grain running vertically and horizontally. The window surrounds are green Westmorland slate.
3, members' entrance on the north side of the building.
4, the handles to the main doors designed by Richard Swale and James Gibbons incorporating a symbolic motif: a ball held by calipers.



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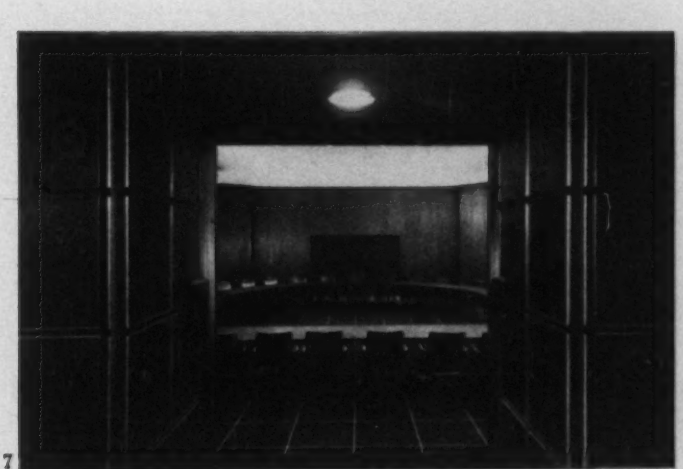
5. the main staircase rising from a black rubber dais. The edge of risers and treads is worked with a white terrazzo ribbon, and the string has been painted red. The curtain behind was designed by the architect and is gold, yellow and black.
6. commissionaire's alcove in the main entrance. The front panel of the desk is of burred elm, with an ebonised black frame; the wallpaper of Sicilian lions behind is gold and black.
7. the boardroom; the carpet is ruby with a grid of silver blue lines; the entrance doors are covered with dark red hide with satin brass finish panels. The boomerang shaped handles are satin brass and leather.
8. the boardroom table visible in 7, designed by the architect in Nigerian walnut with a dark blue hide top. The shape and size can be altered.



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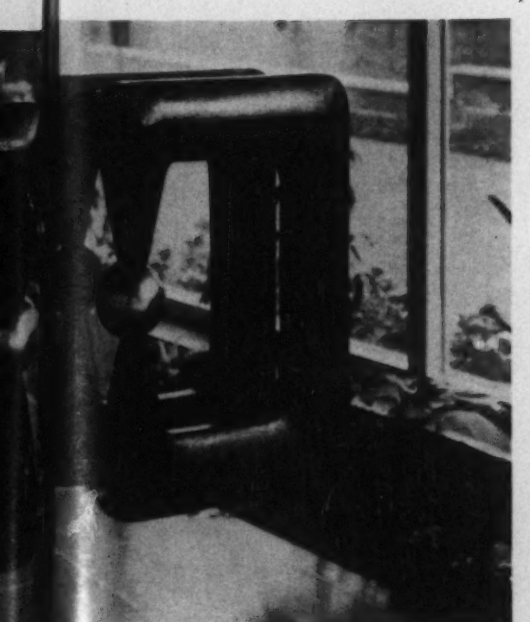
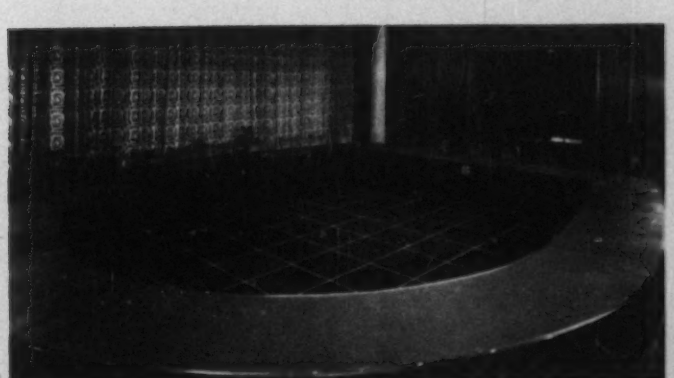




8

Peter Hammond

A LITURGICAL BRIEF

To many an architect the function of a church seems nebulous, his own duty reduced to the provision of shelter and atmosphere. But if the function is defined as the liturgical relationship of priest and congregation, then it becomes precise. Even so, a demanding ritual need not cramp the designer's style intolerably, as the Reverend Peter Hammond points out in his article below, nor does a simpler rite, such as the Lutheran, exemplified by Wilhelm Kongeter's Klarenbach church at Dusseldorf, *opposite, permit him unlimited licence.*

All over western Europe the decade just ended has been one of almost unparalleled activity in the field of church building. In western Germany more than 350 churches have been built or radically reconstructed in the one diocese of Cologne. In France new churches and monasteries are multiplying so rapidly that it is difficult to keep abreast of the latest projects. On this side of the Channel the destruction of the war years, and the growth of new centres of population, have given rise to extensive programmes of church building in almost every English diocese. Many new churches have been built in Holland, Switzerland, Italy, Sweden and Finland. As for the United States, it has been estimated that the next ten years will see the construction or rebuilding of no fewer than 70,000 new churches and synagogues at a total cost of nearly six billion dollars.

It must be confessed that the results of all this activity have been somewhat disappointing. While a great deal of interesting work is being done on the Continent, very few post-war churches can be accounted wholly successful. In this country we have yet to build a church which will bear comparison with Sir Ninian Comper's St. Philip, Cosham (completed in 1938), and the recent survey *Sixty Post-war Churches* is a depressing catalogue of timidity and mediocrity. Much the same might be said of the exhibition organized by the Central Council for the Care of Churches. It seems evident that the Church of England has failed lamentably to seize an opportunity such as is unlikely to recur.

While there are signs of a nascent renewal of church architecture extending from Finland to the Pacific seaboard of the United States and Canada, and while it is widely recognized that there is probably no problem in contemporary architecture where the need for radical solutions is so imperative as that of church design, the real character of the problem is still far from clear. A great deal of hard thinking is necessary if we are not to waste still more time and money on misguided projects which, though not without a certain superficial attraction, are essentially irrelevant. One has of course to recognize that the majority of new churches in every country of western Europe are still pathetic attempts to give new life to dead formulae. It is easy to forget this in considering a highly selective survey like the recent *Eglises de France reconstruites*, or the special number of *L'Architecture d'Aujourd'hui* devoted to church architecture, where the horrors are discreetly veiled. I do not think, however, that the persistence of these historical souvenirs, these sterile exercises in neo-Gothic or sham-Romanesque, need concern us overmuch today. This particular battle has already been fought. Sooner or later, even in this country—where the building of new churches is still inextricably confused with the preservation of old ones—it will be recognized that it is no use speaking to the contemporary world in a dead language.

I believe that the real danger is rather that, for want of any clear grasp of the problems at issue, the Church will identify itself with false solutions based on a highly

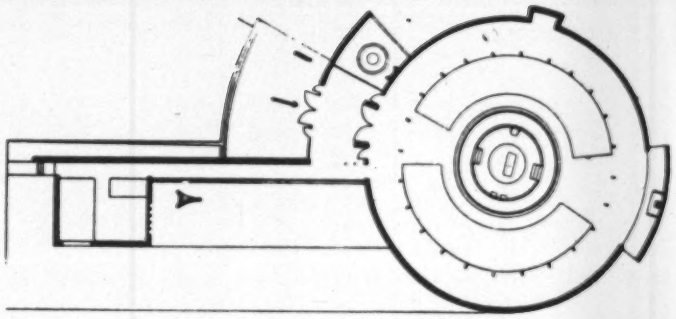
superficial understanding of the present situation. This is happening already, and the first fruits have proved dispiriting in the extreme. There is very little to choose between the familiar essays in dead languages and many of the 'frankly modern' churches which have sprung up all over western Europe during the last few years. It can hardly be too strongly emphasized that the fundamental problem is *not* one of style, of finding a 'contemporary idiom.' It is rather a matter of rethinking afresh the whole question of what a church is for: and the answer to this question cannot, as is often supposed, be taken for granted. It is all very well to say that the designing of a church is not a planning problem but an opportunity to create a shrine to the glory of God. A vague religiousness can never be more than a very imperfect substitute for an informed understanding of the essential function of the church, any more than a lofty conception of the benefits of universal education can take the place of a precise grasp of the problems involved in designing a school. It is necessary to be more specific. It is a striking fact that many architects who genuinely attempt to observe the basic principles of the modern movement in designing a hospital or a factory, seem only too willing to throw all such disciplines to the winds if they are given the opportunity to build a church.

The most successful churches of recent years have been inspired by a movement which is fundamentally theological in character. The Liturgical Movement, as it is commonly known, is an attempt to reformulate in terms of contemporary social and cultural patterns the essential function of the Church in the modern world. Though this movement is not confined to any one country or denomination, it is among Continental Roman Catholics that its influence has been most widely felt. Significantly, it is in those countries of western Europe affected by the Liturgical Movement that church architecture is beginning to emerge from the depths of sterility and irrelevance into which it had fallen.

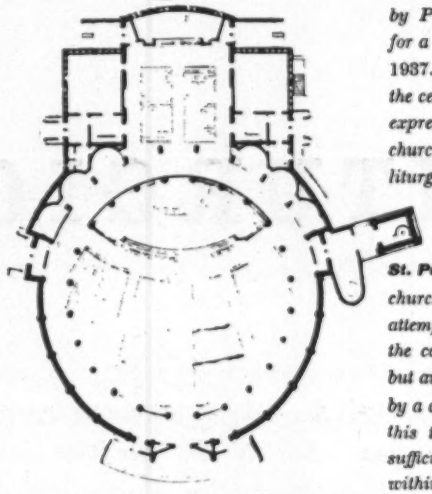
In Germany and Switzerland, and, more recently, in France (where the Liturgical Movement failed to establish itself until the years of the German occupation), a new kind of church has begun to appear: a church which reflects a new theological outlook, a deepened understanding of the liturgy which gives the building its *raison d'être*. The church is seen first and foremost as the place where the local Christian community gathers for the eucharist. *This* is its essential function, to which everything else is subordinate. The liturgy itself is regarded not as something performed by the clergy alone, but as a corporate action in which everyone has an active part to play. Hence the current experiments with novel types of church plan based on the square, the circle, the ellipse and the trapezoid. Such plans are not primarily the result of the freedom conferred by modern methods of construction. They are the outcome of the Church's new understanding of itself, and of the liturgy in which its essential character should be most fully realized and made manifest.

Churches like St. Albert, Saarbrucken, and St.

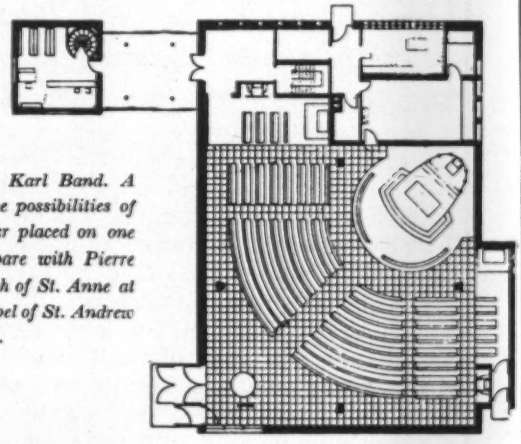
[*continued on page 244*



***Boust,** above, new church in the Mosel by Pingusson, who produced a proje for a church of this type as long ago 1937. The congregation stand all roun the central altar. The plan is admirabl expressive of the primary function of th church as the eucharistic room, and of th liturgy as the act of the whole church.*

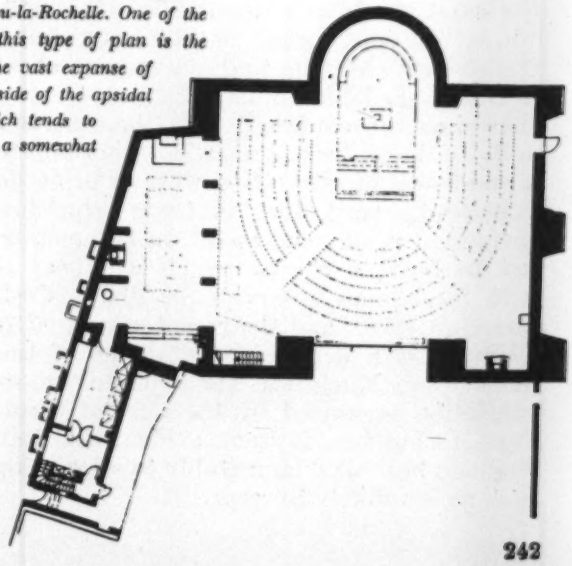


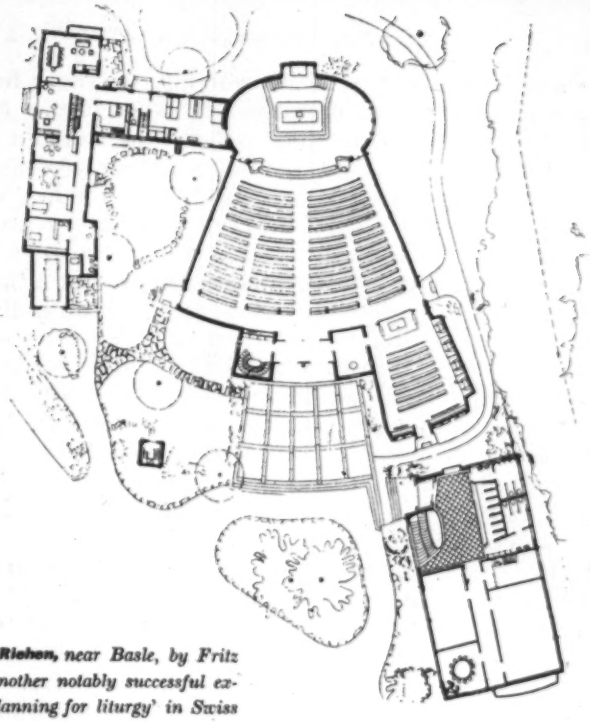
***St. Peter, Yvetot,** left, recently complete church in France by Yves Marchand. A attempt to create a church which expresse the corporate character of the eucharis but avoids the practical difficulties create by a central altar. As with other plans o this type, the sanctuary tends to be in sufficiently defined: it is swallowed up within the main volume of the church.*



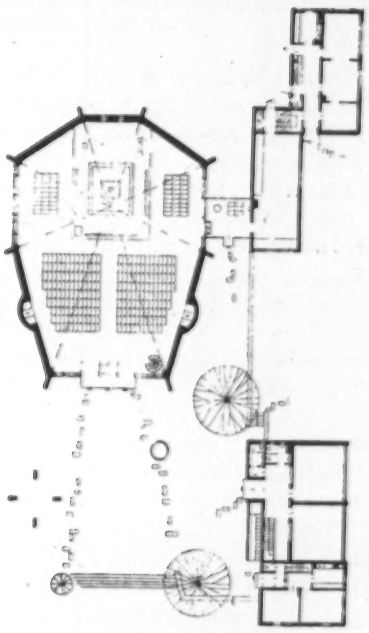
***St. Rochus, Turnich,** by Karl Band. A plan which illustrates the possibilities of the square, with the altar placed on one of the diagonals. Compare with Pierre Prunet's projected church of St. Anne at Nancy and the tiny chapel of St. Andrew at Nice by Renner Senn.*

***St. Elisabeth, Opladen,** by Emil Steffan, below, one of several recent 'amphitheatre' plans: there is another good example in France at Laleu-la-Rochelle. One of the difficulties of this type of plan is the treatment of the vast expanse of wall on either side of the apsidal sanctuary, which tends to give the church a somewhat theatrical air.*

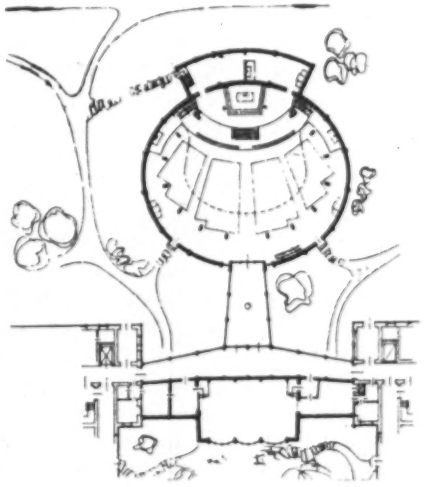


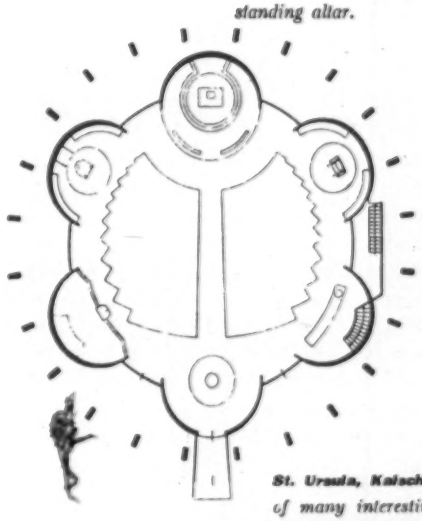


St. Francis, Riehen, *near Basle, by Fritz Metzger. Another notably successful example of 'planning for liturgy' in Swiss post-war churches.*

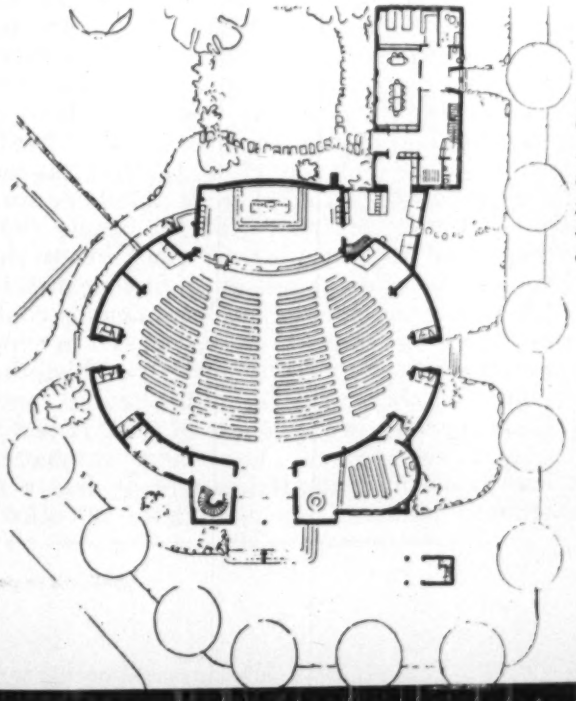


St. Michael, Wipperfurth-Neye, *by Bernhard Rotterdam, above, interesting plan based on an irregular octagon. The congregation sit on three sides of the free-standing altar.*

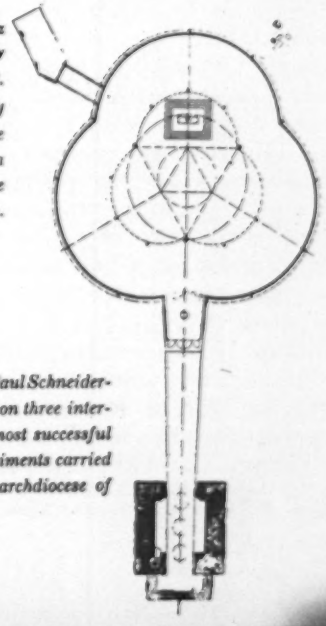




St. Ursula, Kalscheuren, *above left, one of many interesting post-war plans by Gottfried Böhm. It suggests comparisons with certain Baroque churches.*



SS. Felix and Regula, Zurich, *by Fritz Metzger, left, and* **Chapel of University Clinic, Freiburg,** *by Horst Linde, top left. At Freiburg, as at Yvetot, the sanctuary tends to 'float'. Metzger overcomes the problem by placing the altar within a shallow rectangle on the short axis of the ellipse; a notably successful solution.*



St. Rochus, Dusseldorf, *by Paul Schneider-Esleben, right. Plan based on three intersecting circles. One of the most successful of the many planning experiments carried out since the war in the archdiocese of Cologne.*

Ursula, Kalscheuren, both by Gottfried Böhm, Horst Linde's chapel for the University Clinic at Freiburg, Fritz Metzger's church of SS. Felix and Regula at Zurich, and St. Peter, Yvetot, by Yves Marchand, all demand to be judged not simply on aesthetic grounds —as essays in plastic research for its own sake—but as attempts to embody in architectural form a theological vision. The reason why the typical medieval plan, with its elongated nave and chancel, and its altar set against the east wall, is being so widely abandoned on the Continent today is the fact that it expresses an entirely different understanding of the liturgy, and of the function of the church building, from that now current in Liturgical Movement circles. The marked preference for plans based on the square, the circle, and the ellipse orientated on its short axis, is not due to aesthetic considerations at all. It reflects the growing demand that the laity should be able to play their full part in the liturgy: that the relationship between the ministers at the altar and the whole body of the faithful should express their common status as con-celebrants in the eucharistic action. Other functions of the church include, of course, the ministry of the word and the sacrament of baptism, but its primary purpose is to provide a place for the celebration of the eucharist.

It has been said that one of the difficulties of church architecture in the past has been that architectural form has followed too closely an inadequately conceived function. I believe that this is true not only of the past: it is the crucial difficulty today, particularly in this country. We have no clear conception of the function of the church building, and until the client is in a position to supply the architect with an adequate programme he can scarcely complain if he gets an unsatisfactory church. The reason why the best of recent Continental churches are so far in advance of any we have built in England is, quite simply, that a great deal more thought has been given on the other side of the Channel to the question of what a church is for. It is not that we have no architects of the calibre of Fritz Metzger or Rudolf Schwarz—though whether commissions for new churches are going to the most suitable architects is another matter. The fact is that the best Swiss, German and French churches of the last decade are *theologically* informed to a far greater degree than their English counterparts.

The new Coventry cathedral promises to be a particularly spectacular example of architectural form following an inadequately conceived function. Basil Spence himself has asserted that 'a cathedral in England has a greater purpose than a church in which only to hold services. . . . The object of this cathedral is to turn the visitor who may go into the cathedral alone for a half hour's peace—to turn him from a visitor into a worshipper.'* Now a cathedral is not a parish church—but neither is it an oratory. If its function is more complex than that of the eucharistic 'room' it is none the less determined by the liturgy. As Marvin Halverson has remarked: 'Corporate worship sums up all the activities and meaning of the Church. . . . While personal devotion and private worship are not denied, worship in the Christian community is a communal act. Therefore a church building must be designed not for the worship of the alone with the Alone, but for a corporate fellowship called to a purpose in the world. The building should be shaped by worship, and not worship by architecture.' The task of the architect must always be to create a worthy setting for the liturgy: not a building 'designed to achieve a "mood" in which an individual may have a "worship experience".'† To conceive the primary function of a cathedral in terms of its effect upon the casual visitor is rather like describing the Festival Hall as a building where one can have a pleasant meal with a view of the river. It is to ignore its fundamental *raison d'être* while giving undue prominence to something that is essentially incidental and derivative.

Coventry cathedral will no doubt be praised or criticized in due course on aesthetic grounds. It seems to me that its fundamental weakness lies elsewhere: in an inadequately conceived functional analysis. This church contributes nothing to the debate which has been proceeding during the 35 years since the building of Perret's epoch-making church at Le Raincy. It springs from an entirely different world of thought. The quest for sparkling and beautiful altars at the end of long vistas is strictly irrelevant to the problems of church planning and liturgy which are exercising Continental architects like Metzger, Schwarz and the Böhms, and which will sooner or later have to be faced in this country also, if we are ever to build a church worthy of its purpose. We are in no position today to build cathedrals. Our immediate task is to apply ourselves afresh to the grammar of church architecture—not to compose epic poems.

So far as the Continent is concerned, a great deal of hard thinking *has* been done since the 'thirties. If the Liturgical Movement has as yet produced very few really outstanding churches, it has at least created a widespread awareness of the true character of the problems at issue. It has also inspired a considerable number of unpretentious churches which combine great artistic integrity with a lucid grasp of liturgical principles—by which I mean far more than the arrangement of church furniture. There are many examples of such *tâches modestes*—wholly admirable as far as they go—in and around Basle; while recent French churches like those at Tournan-en-Brie, Morsang-sur-Orge and Issy-les-Moulineaux, if not free from certain prevalent faults—such as the reckless use of *pierre apparente*—hold out considerable hope for the future. Le Corbusier's chapel at Ronchamp (which, it is important to remember, *is* a pilgrimage chapel and not a parish church) goes much further than these modest suburban churches. Alone among contemporary churches it seems to me to succeed in expressing, in forms which are entirely free from historicism, something of the symbolic, cosmological function which also belongs to the House of God. It is a very remarkable achievement, but, most emphatically, not one to be imitated. It has already had a most unfortunate influence on a number of otherwise

* *Religious Buildings for To-day*, New York, 1957, p. 132.

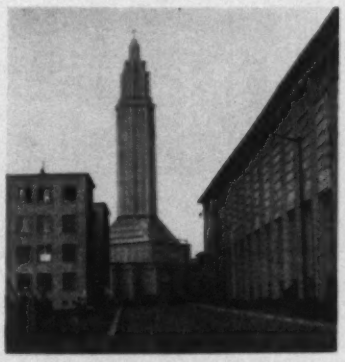
† *Ibid*, p. 4.

[*continued on page 255*

tower

1, *the aspiring vertical thrust of a tower is, in the case of Auguste Perret's church in reconstructed Le Havre, a favourite motif of the designer, as well as a potent Christian symbol. Indeed, the poising of such a tower above the centre point of a four-square plan is an epitome of the confluence of Gothic and Classical ideas on which his life's work was based.*

2 *and* 3, *even inside the church the powerful vertical emphasis is maintained, reinforced concrete making possible an open-work structure almost completely free from internal braces or other visual obstructions, while the standardized precast elements of the spiral staircase introduce an immediately recognizable module of human scale, at a distance where the accurate visual appreciation of dimensions can become difficult.*



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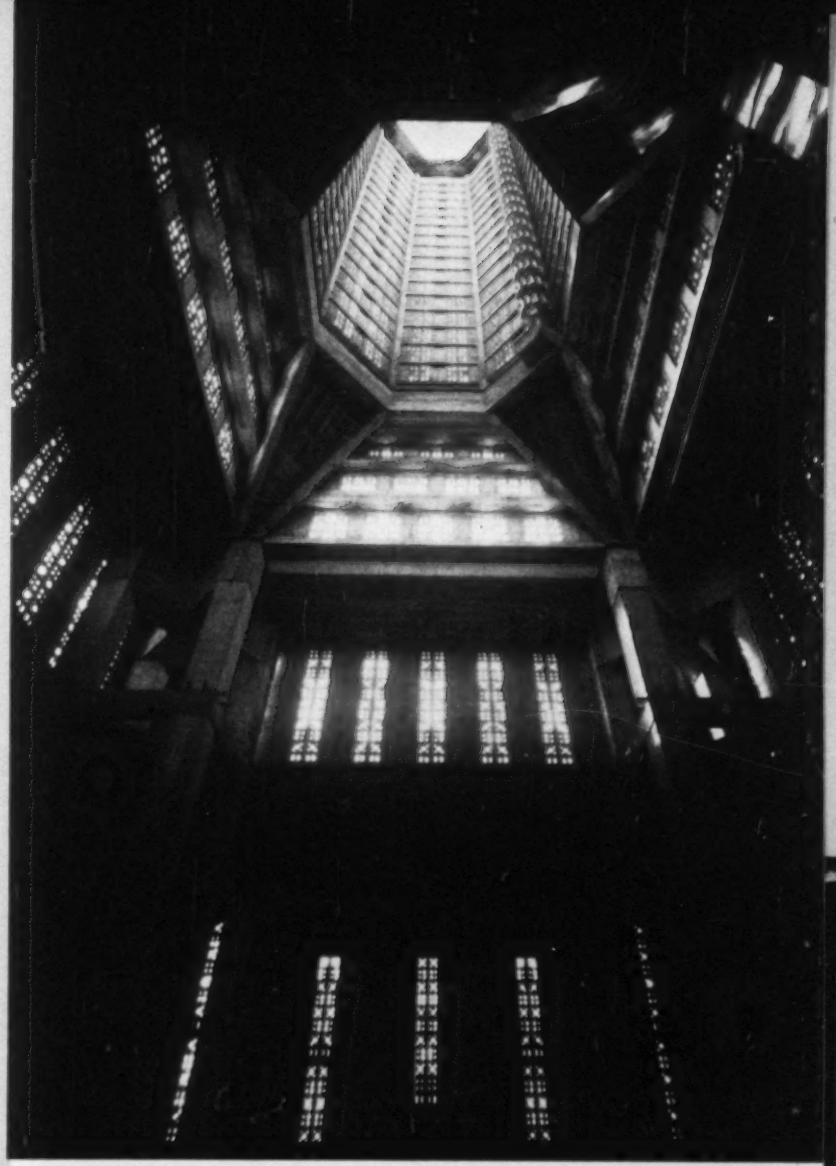

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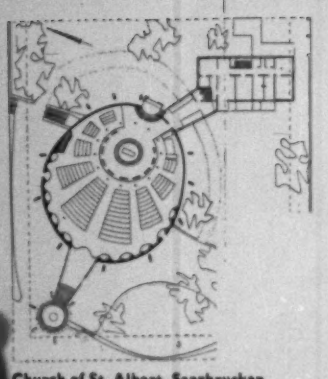


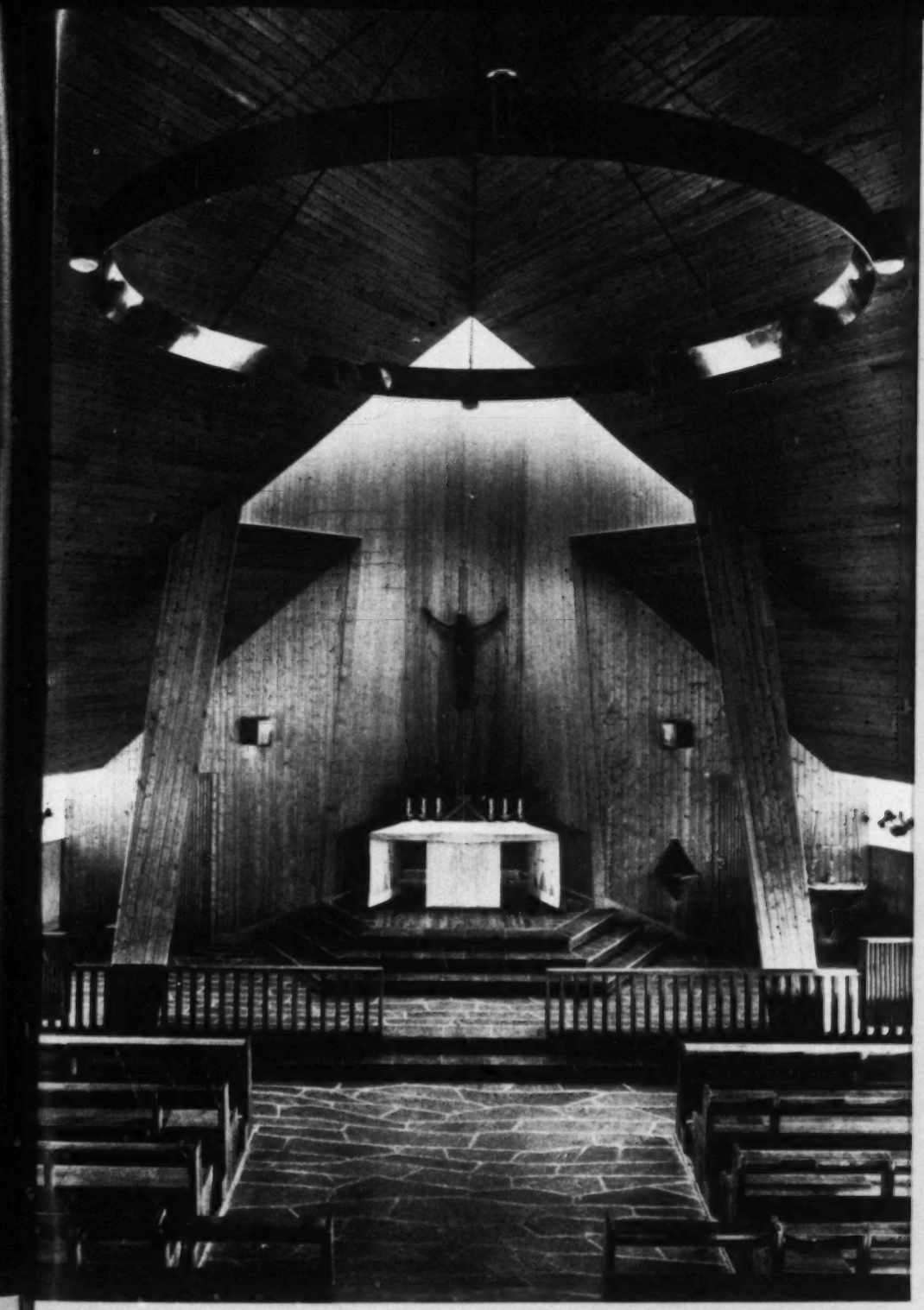
Church of St. Albert, Saarbrucken.

oculus

4, the egg-plan church of St. Albert, Saarbrucken, designed by Gottfried Bohm, son of the celebrated Dominikus Bohm, is one of a number of recent European churches that have put new life into the Baroque device of concentrating the main source of light above the altar. It is also almost unique in utilizing one of the plan-forms advocated by Rudolf Schwarz in his book Vom Bau der Kirche *(reviewed in AR, October, 1952), though Schwarz's version had a central column passing through the altar, not a ring of columns surrounding an arena-like space, as here.*

5, Michel Marot's striking wooden church of St. Agnes at Les Grés, also employs a light-source immediately above the altar, but hidden (from the view of the congregation) in the base of the spire, whose supporting struts are grounded just beyond the chancel rail.

6, the spire, while a distinct



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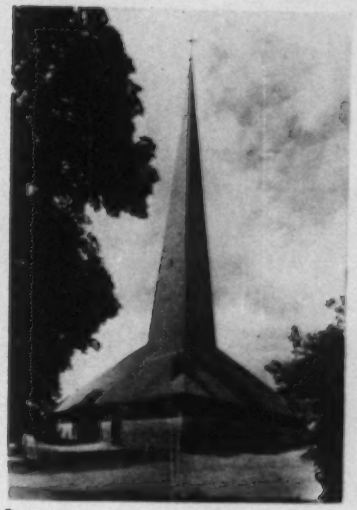

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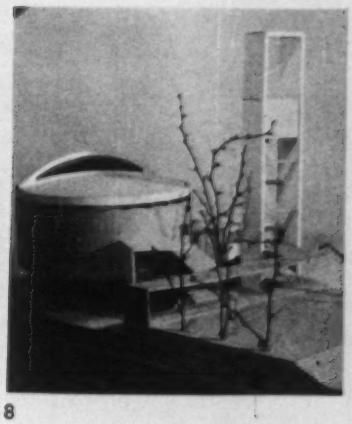


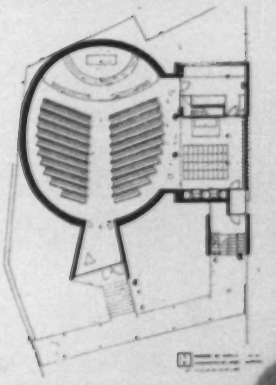
8

structural and visual entity, is clearly conceived as part of a coherent system of triangular forms, deriving from the peculiarities of site and plan.

7, the wooden detailing of St. Agnes is as coherent as the structural form—this view looks across the porch to the gallery stair and the baptistery beyond.

8, another form of concealed chancel lighting, again with Baroque forebears, appears in this proposed church for Suarce, near Belfort, designed by Dumas, Dumas and Wecker, utilizing a window in a gable formed above the chancel rail.

Church of St. Agnes at Les Grés.



Church at Suarce near Belfort.

9

10

11

12

church wall

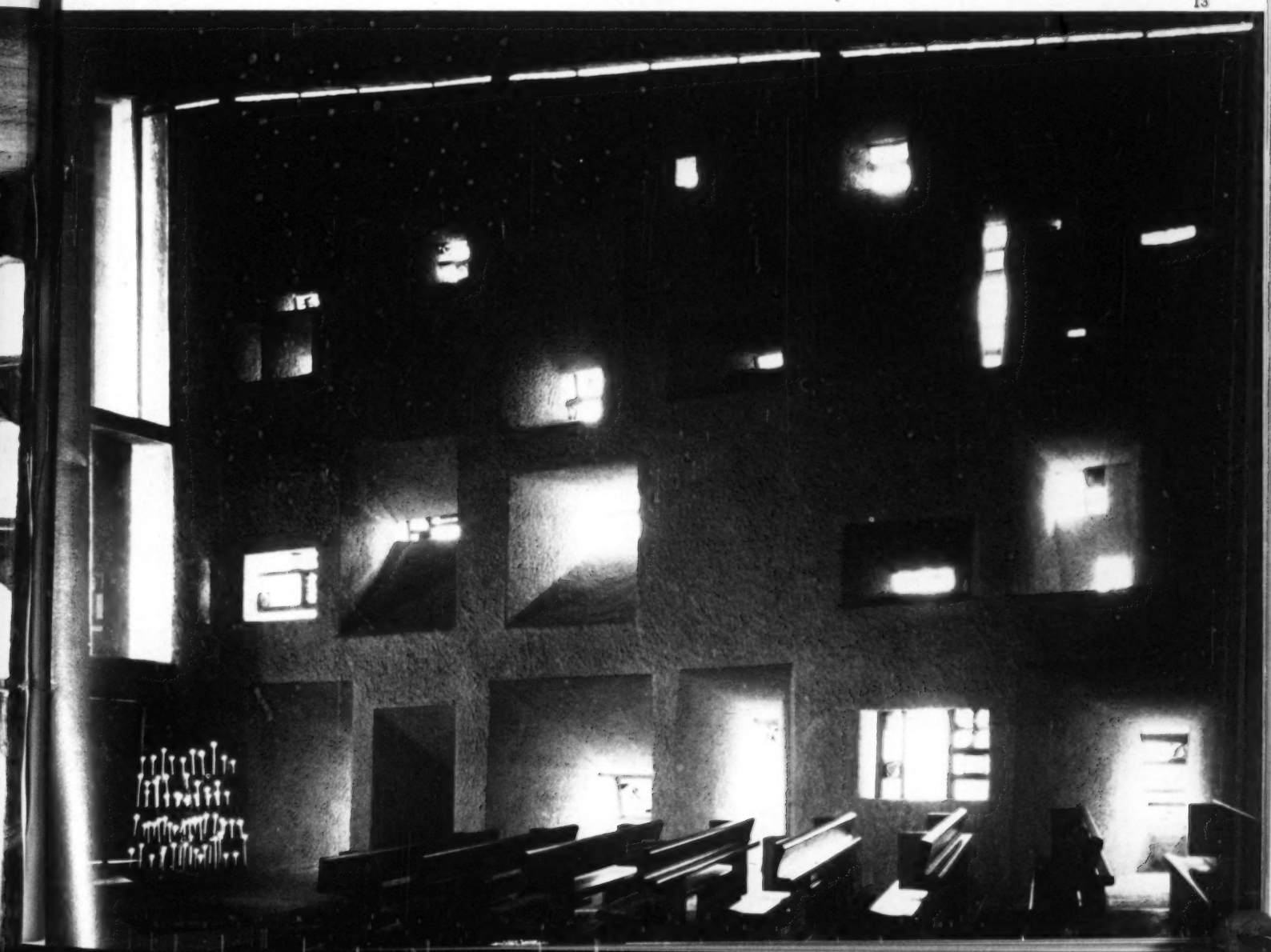
9, *the church wall, which it had become something of a modern orthodoxy to regard simply as a light-transmitting membrane, is now commonly treated as a much more active participant in the design of the interior, and in Marcel Lodz's Ste. Jeanne d'Arc at Belfort it is modulated by a series of tall louvres directing light toward the altar.*

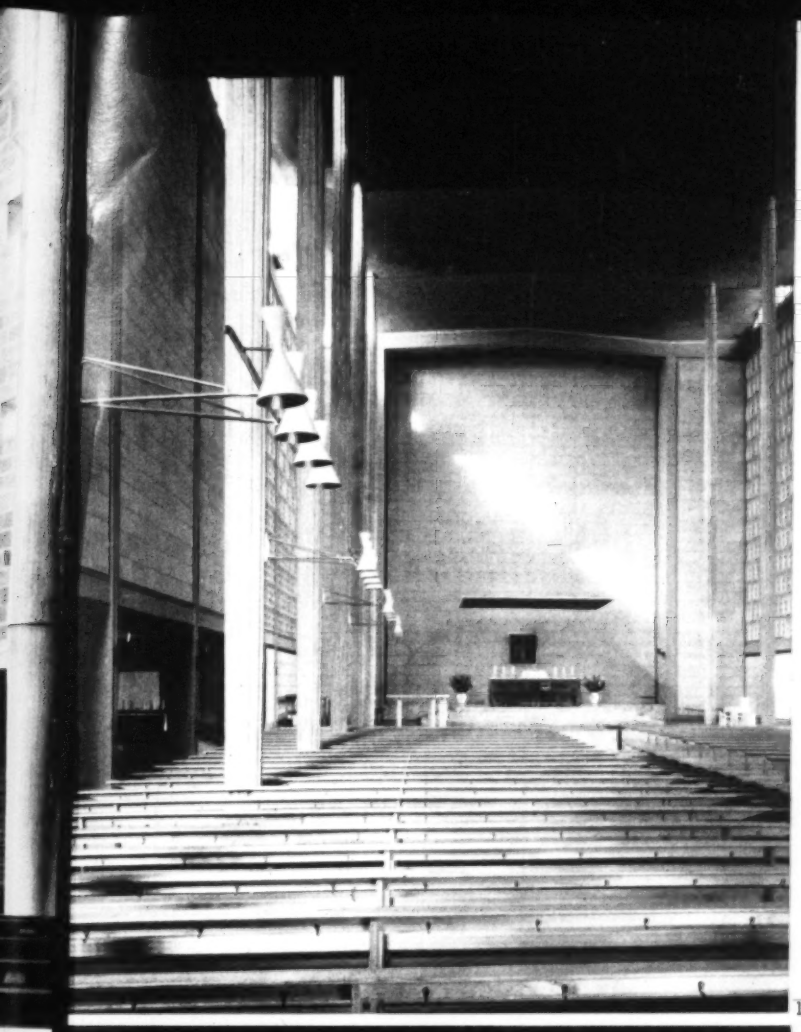
10, *in the church of St. Maurice, Saarbrucken, by August Dietz, the nave wall is treated as a glazing expanse of coloured glass.*

11, *St. Joseph's, Cologne, Schwarz and Bernard, working in a manner unlike anything in Schwarz's book, use polygonal and vertical openings to distribute light and direct the gaze of the congregation as the liturgy requires.*

12, *the concept of the nave wall as a pierced membrane is seen at its most dramatic in France, though the 'columbarium treatment' favoured by Robert Faraut in the church of Notre Dame de Grace at Morsang-sur-Orge, is as unusual as its scale effects are deceptive.*

13, *the most famous of all perforated church walls is Le Corbusier's unprecedented, but functionally impeccable, chapel of Notre Dame du Haut at Ronchamp, pierced by apertures like mediaeval firing slits, through which shafts of coloured light stab into the interior.*





16

17

nave

14, *even thirty-five years after its completion, Auguste Perret's concrete basilica at Le Raincy continues to serve as a norm to which all modern church interiors are compared, and many, to this day, are still subtle deviations from that norm, as in the case of the church of the new Dominican Priory at Lille (facing page), designed by Pierre Pinsard and Neil Hutchinson, where the columns, albeit tapered and bracketed, and the running vaults, albeit sprung from recurved beams, clearly reveal the Perretesque inspiration.*

15, *the other dominant tradition in modern church interiors is that of the Protestant preaching hall, without internal columns, a plain roof on plain walls, and an east end disposed in such a way as to give prominence to the pulpit, exemplified here by the studied elegance in brick and concrete, wood and metal, of the Bullinger Church, Zurich, by the brothers Pfister (facing page).*

16 *and* 17, *further variations on the two dominant spatial types: Hermann Baur's All Saints', Basel, columniate, vaulted, Perretesque, and a small church at Thayngen, Switzerland, by Josef Schutz, which—like the churches by Basil Spence and Partners illustrated in AR, February,* 1958 *—uses an exposed internal structure to give articulation to a hall-like space, but in this case for the Roman rite.*

altar

18 *and* 19, *whether the altar-table serves as the work-surface of an active liturgy, or more abstractly as the repository of symbolic concepts, it must still be the visual focus of the interior of any Christian church, and in few churches has attention been more dramatically focused than in Rudolf Schwarz's St. Anne, Duren. The altar is a massive stone block, situated under the crossing of a pair of imposing roof-beams, in the angle of an approximately L-shaped space. Light falls on it from the arms of the L, filters down on it through a pierced wall-panel, glows around it from two ranks of hanging lamps.*

20, *among the most widely noticed of recent churches has been Figini and Pollini's, allegedly Brutalist, Madonna of the Poor, outside Milan (facing page), but notice has concentrated too much on the structure and too little on the liturgical arrangements. The altar-table is a roughly-hewn slab of stone, balanced on a single upright, and it stands in a kind of inner chancel (a device not unknown in Italian churches) formed by a free-standing concrete screen that makes five sides of a hexagon, with its open side towards the congregation.*

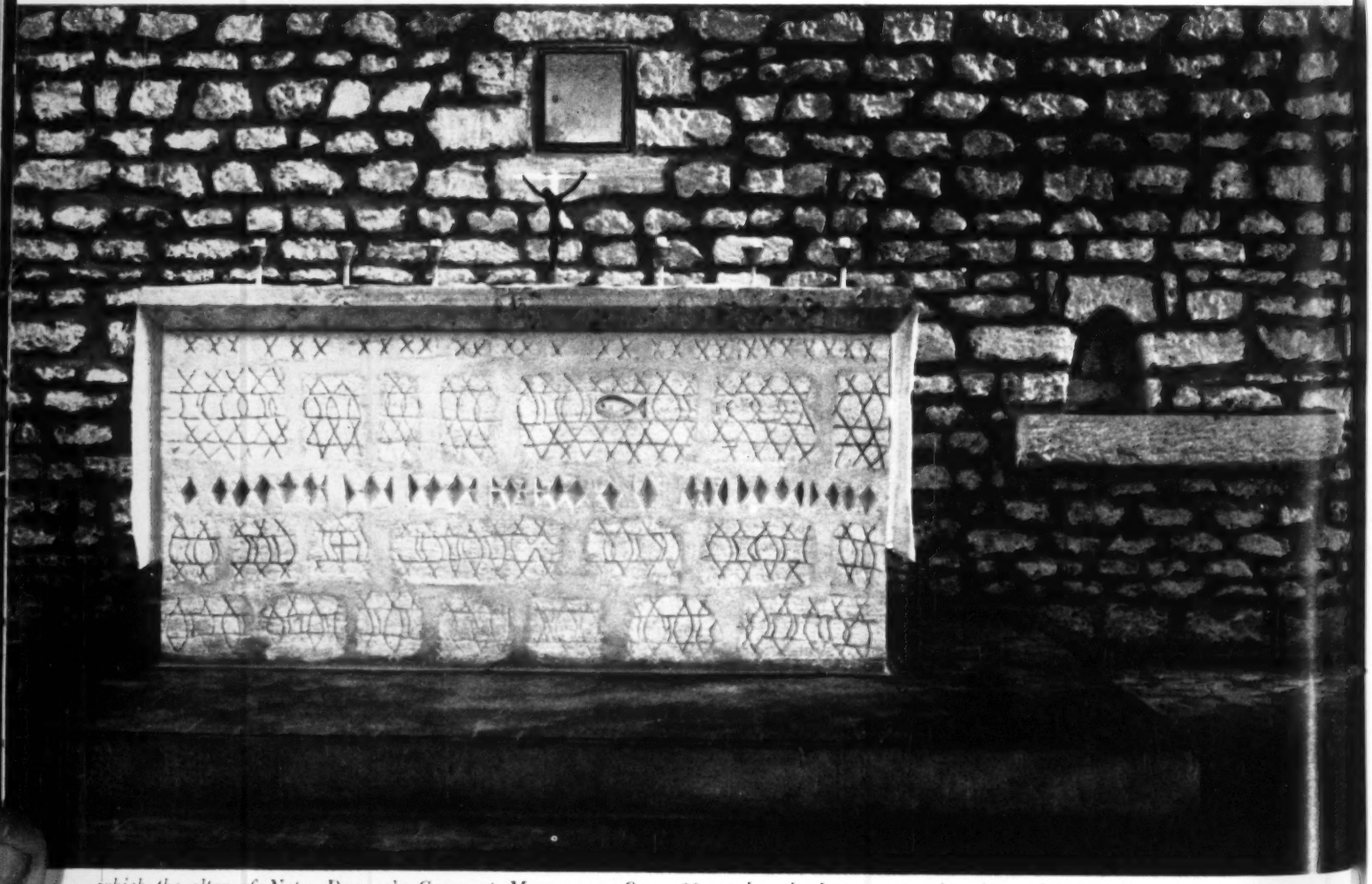
18

19

21

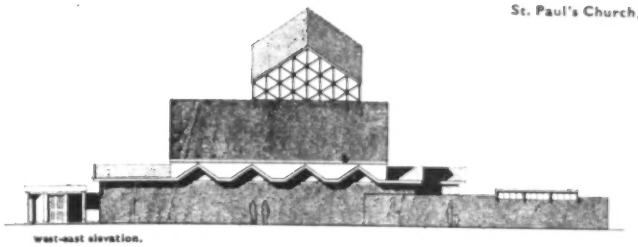
In the design of the altar-table itself, two traditions almost as old as the liturgy are at war: one insisting that it be made glorious with art, as in Hermann Baur's All Saints', Basel, 21, the other that it shall be left as a plain, primitive table—a tradition with

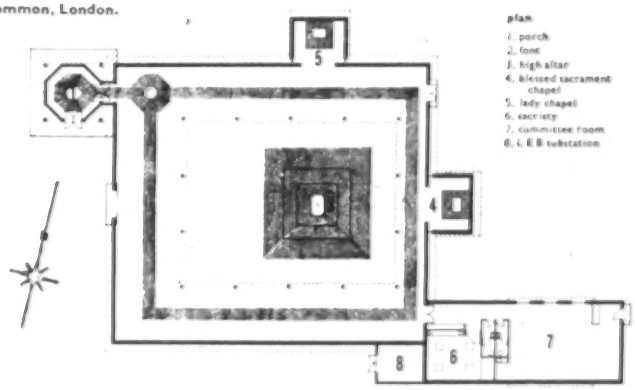
22



which the altar of Notre Dame de Grace at Morsang-sur-Orge, 22, makes the last compromise short of letting it completely alone.

St. Paul's Church, Bow Common, London.





St. Paul's church (Church of England), Bow Common, London, E3, architect, Robert Maguire, has an experimental arrangement with freestanding altar, the seating, pulpit and other furnishings can be moved to other positions in the light of experience. The chairs are stackable.

continued from page 244]

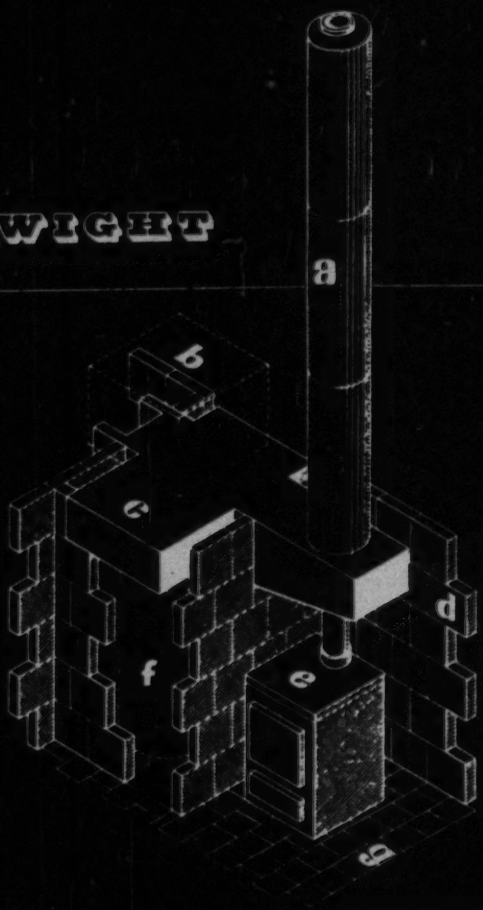
interesting parish churches in France—Villey-le-sec, for example.

The prospect for church architecture on this side of the Channel is at the moment somewhat cheerless. It is to be feared that, as the ecclesiastical authorities begin to grasp the revolutionary notion that it is traditional to be modern, we may expect to see still more examples of what are essentially medieval churches masquerading rather selfconsciously in contemporary fancy dress. There are, nevertheless, some grounds for hoping that the next ten years will see an increasing awareness of the real character of the problems confronting the church architect. Robert Maguire's new church at Bow Common may well prove to be of far greater importance than any church built in this country since St. Philip's, Cosham. It is the outcome of a systematic application of functional analysis to the problems of church design; the unusual plan springs 'from an attempt to relate the altar to the priest and people in such a way that they can best carry out their functions in the liturgy.' This unpretentious parish church promises to be a notable landmark in the development of church architecture in this country.

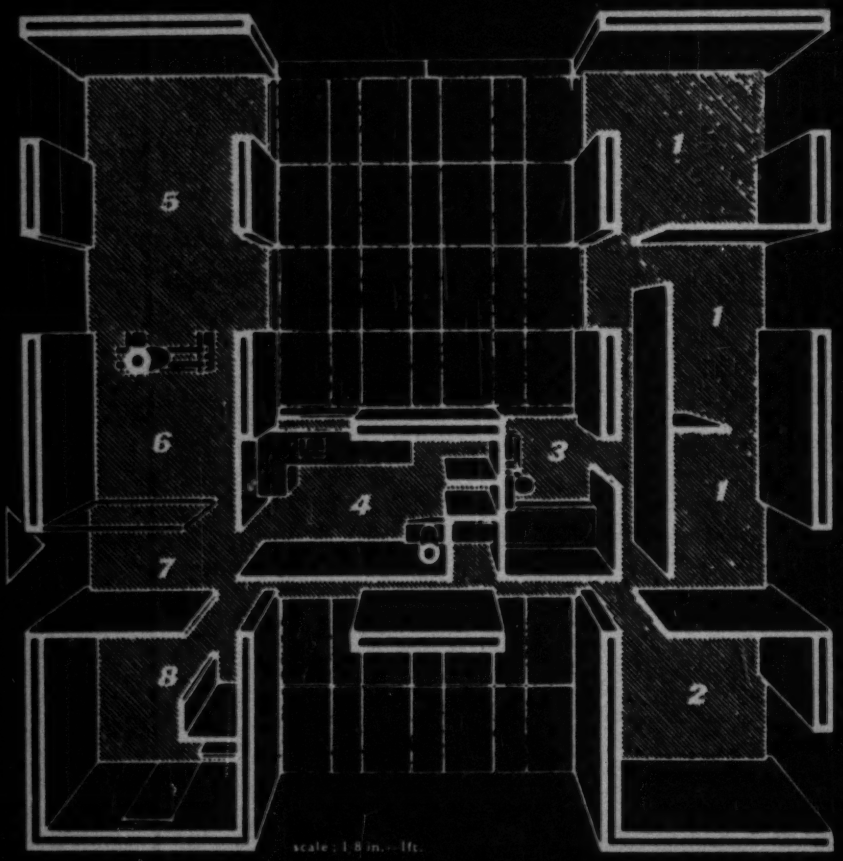
One of the main factors in the renewal of sacred art on the Continent has undoubtedly been the existence of enlightened ecclesiastical patronage: in France, for example, the Dominican Order has played a crucial role. In this country, on the other hand, it may well be that the initiative will come from the architect. I see no reason why an informed architect should not exercise upon an ecclesiastical client the kind of salutary influence that he has already brought to bear upon the Ministry of Education. The new church at Bow Common shows that it *can* be done, provided the architect knows what he is doing. If the principles of the modern movement have any validity, they are applicable to the design of churches as well as schools. If this were more generally realized in architectural circles in this country we should be well on the way to a more rational approach to the problems of church building.

HOUSE IN THE ISLE OF WIGHT

ARCHITECTS | **JAMES STIRLING AND JAMES GOWAN**



kitchen stove



plan

key

a, precast concrete outer lining. refactory concrete inner lining, lime mortar fill.

b, tiled bathroom soap tray.

c, r.c. beam.

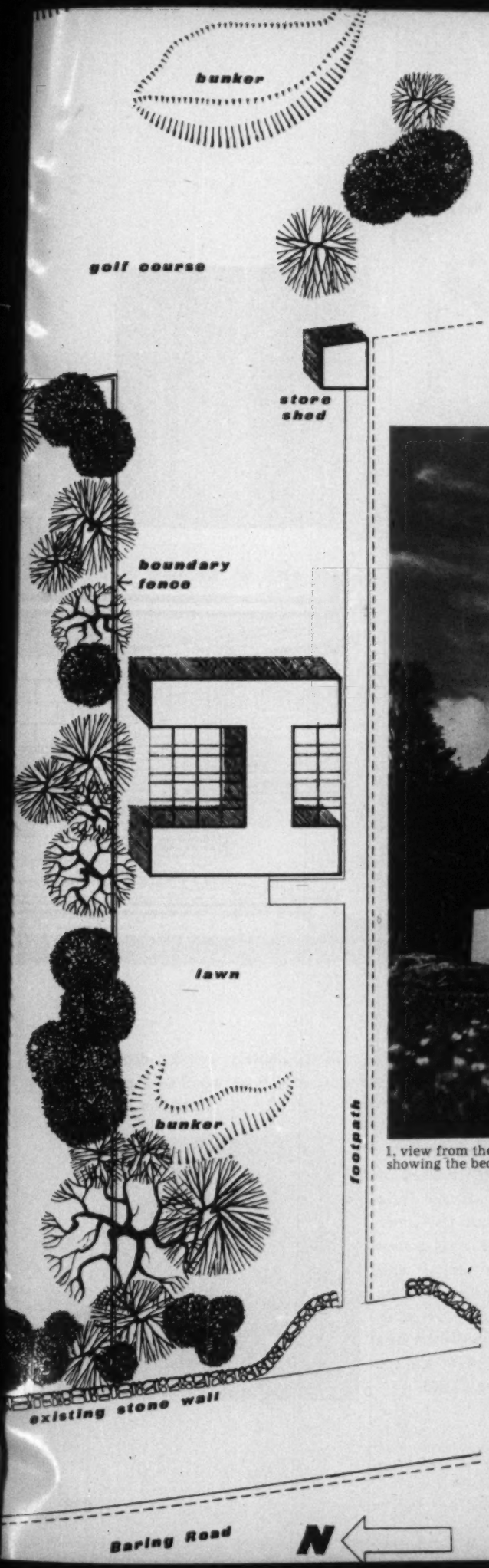
d, fair face. 18 in. × 9 in. × 2½ in. precast concrete blocks.

e, crane stove.

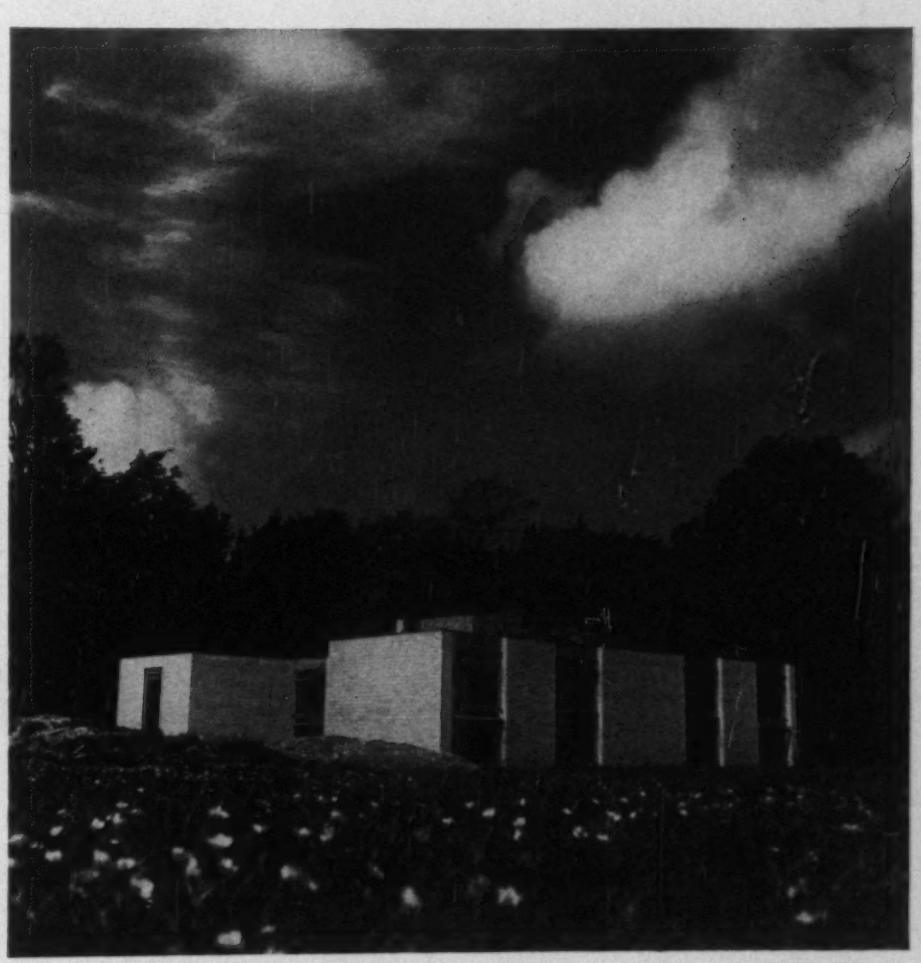
f, 30 galls. copper calorifier.

g, red quarry tiles.

1, bedroom.
2, studio bedroom.
3, bathroom.
4, kitchen.
5, living room.
6, dining room.
7, entrance hall.
8, store.

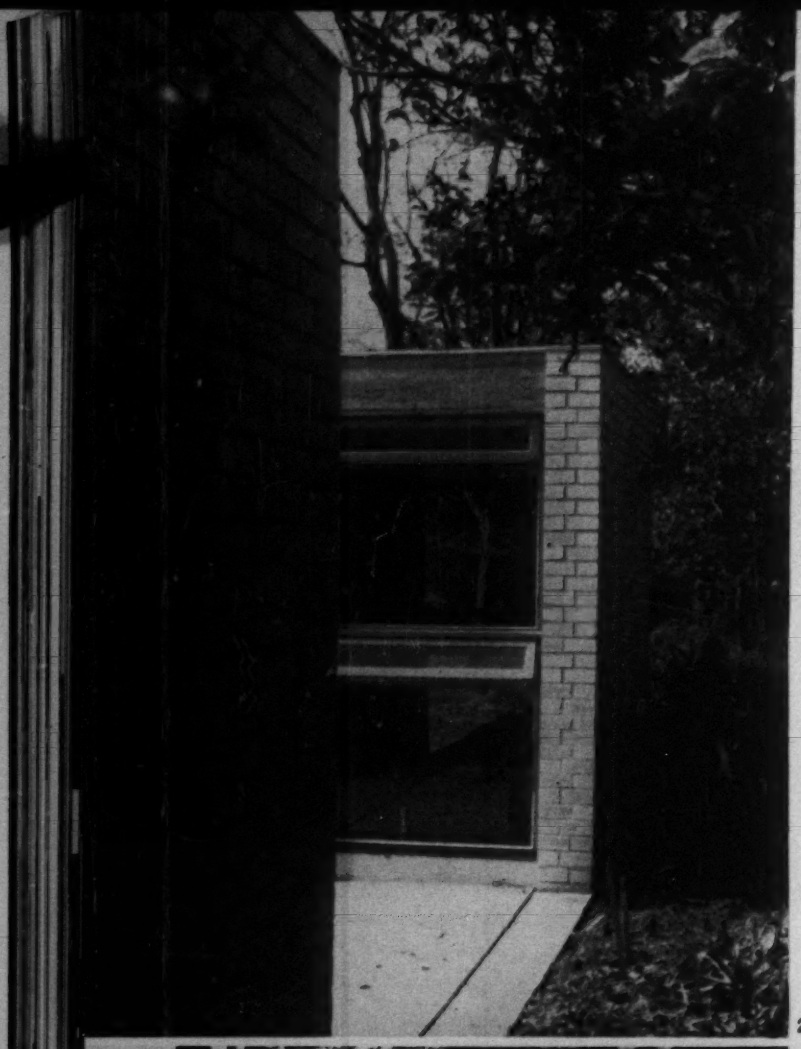


The house is in Baring Road on the outskirts of Cowes, with Northwood Park Golf Course on the east ; the road was previously a stone-walled country lane which is now being developed with detached private housing. It had a chilly reception from the County Planning Department and a local panel of architects made various suggestions including a roof with 18-in. overhanging eaves ; it was also intended to use smooth red wire cut bricks (commons) internally and externally but this was not permitted. However, after three months' delay, approval was given without further modification. The owner, a painter, required as large a house as possible within reasonable economic limits for himself, his wife



1, view from the south-east, showing the bedroom wing.

and two small children. A simple repetitive structure was adopted consisting basically of a 5-ft. wide brick pier with a discontinuous brick footing and a 5 ft. 9in. timber trimmer spanning a 5-ft. wide opening. These carry 5 in by 2 in. joists which span 10 ft. All load-bearing walls are 11-in. cavity white sandlime brickwork fairfaced inside and out, and non-load-bearing partitions are 2½-in. fairfaced concrete blocks. The floor finishes are 4-in. Gurjun strip flooring on battens in the living-area and 6 in. by 6 in. smooth red quarry tiles. The roof is lined with 1-in. fibreglass quilt and the ceiling is 3-in. wide softwood tongued-and-grooved V-jointed boarding. Three layers of roofing felt with a white grit finish are laid on 1-in tongued-and-grooved boarding and the eaves are finished with a 1 in by 1½ in.



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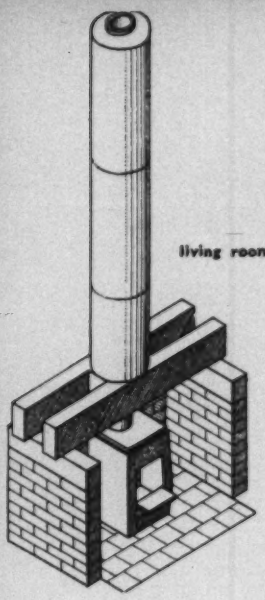
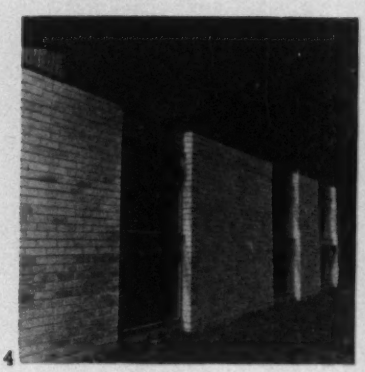
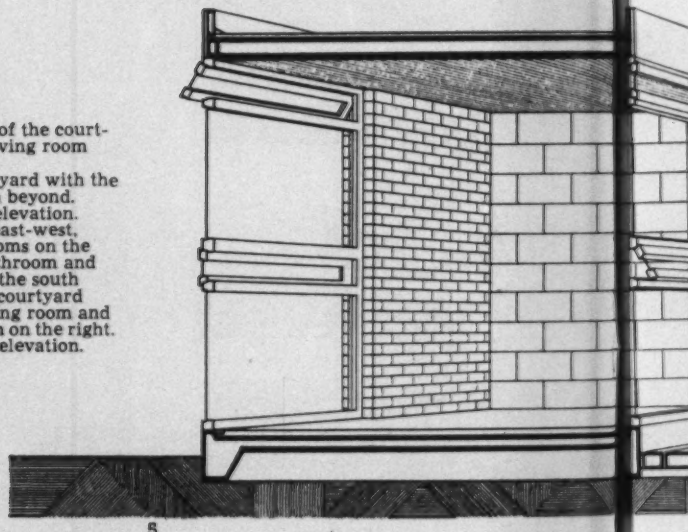




4

2, a corner of the courtyard and living room wing.
3, the courtyard with the living room beyond.
4, the east elevation.
5, section, east-west, with bedrooms on the left, the bathroom and kitchen on the south side of the courtyard and the living room and dining room on the right.
6, the west elevation.



5

3

aluminum angle edging. All the joinery, ceiling, doors and windows are softwood treated with wood seal and given three coats of matt varnish. The fireplace flues are carried on in-situ r.c. beams. The outer lining is constructed of precast concrete drain pipes and the inner of precast refractory concrete units, with the interspace filled with lime mortar. The house has an area of 1,600 sq. ft. and the cost was £2,800.

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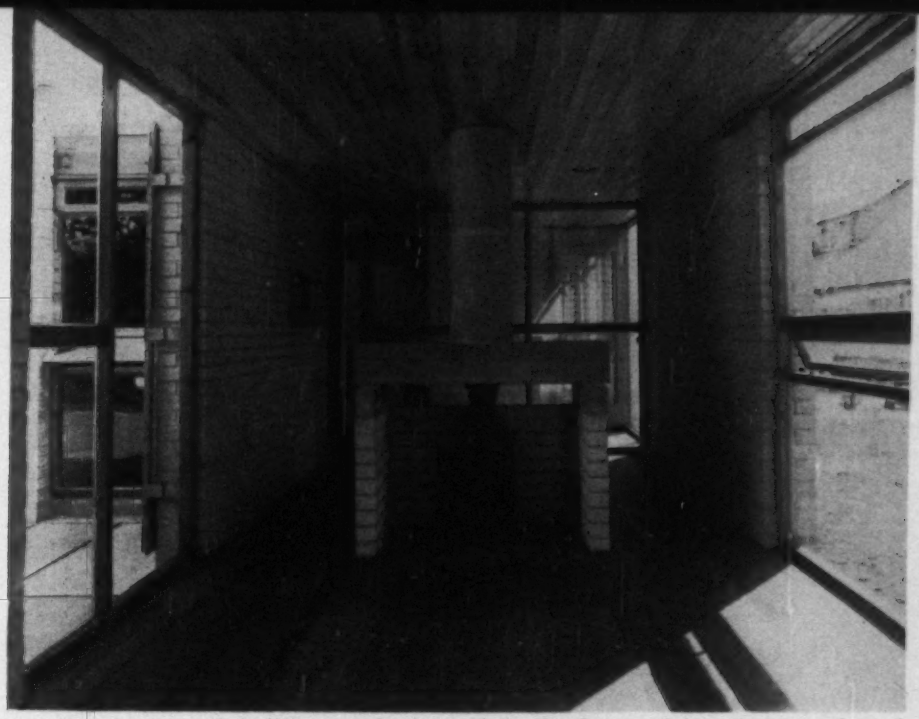
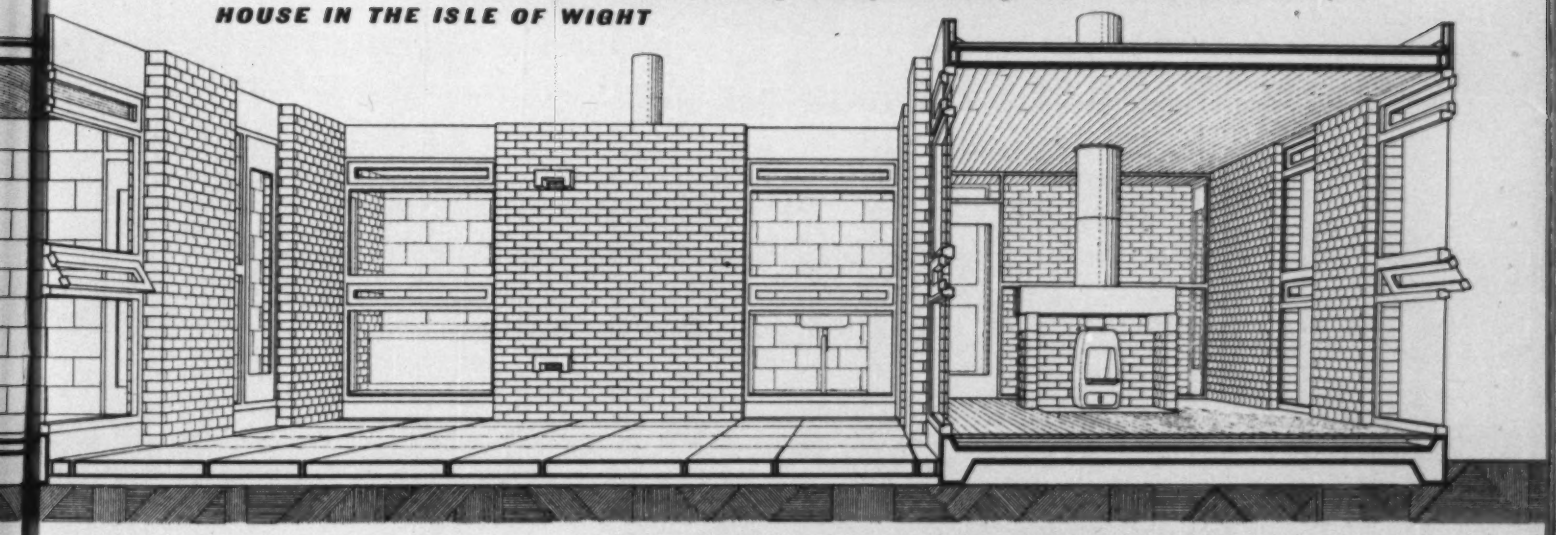
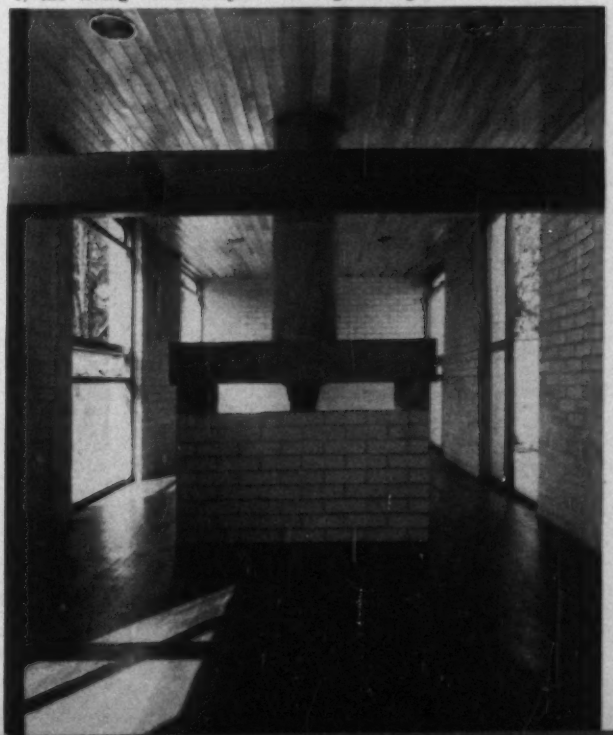
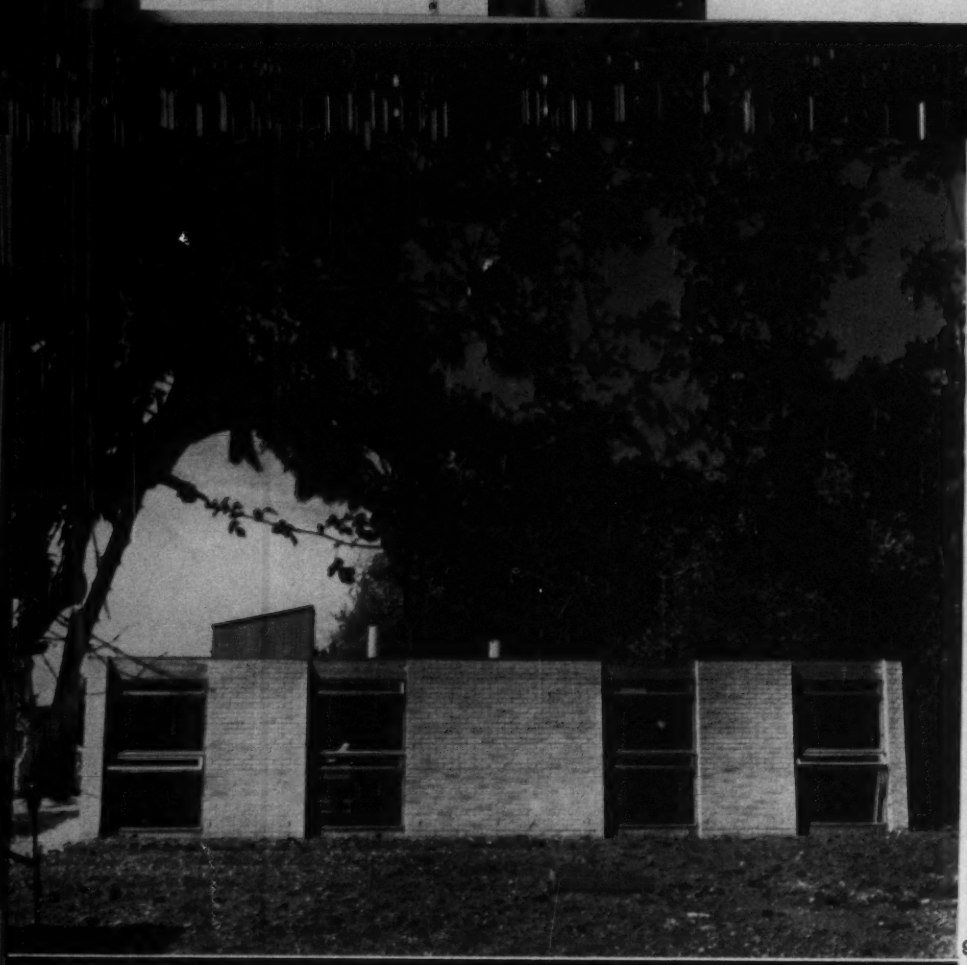


7, the living room fireplace with the glazed screen at the main entrance beyond.



8, the living room fireplace through the glazed screen of the entrance hall.





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9. the east elevation.
10. close-up of kitchen sink with courtyard beyond

ID

INTRODUCING A MONTHLY REVIEW OF INTERIOR DESIGN

To have designed the inside as well as the outside of a building is to have created one of the most complete works that is within a man's compass, and the pioneer theorists of Modern Architecture rightly insisted that interior design must be an integrated part of architecture, and must always lie within the architect's sphere of responsibility. But their ideal picture of a building designed from fire-irons to fenestration by the same hand was too ideal, and ignored the vital factor of differing rates of obsolescence as between the frame of the building and its furnishings.

The factors of safety that enable a building structure to survive one cycle of the seasons will normally be big enough to see it through a hundred, but an interior that fits its occupants functionally at the moment of the building's inception, is likely to be frustration to them in two decades or less. The architect's mind, geared to generalized functions that change slowly, or never, is unlikely to be athletic enough to deal with specialised functions that change in the school-years of a child, or may be transformed in months by a new system of accounting.

And yet, clearly, he cannot abdicate his interior responsibilities, either by an act of repudiation or one of self-delusion ('complete flexibility of plan'), without losing control of those very areas of shelter which it is his prime function to create. He needs—save for rare cases of genius—something like the same kind of sympathetic consultant advice that he could get from a first-class structural engineer.

But such collaboration must be truly sympathetic. The old-style interior-

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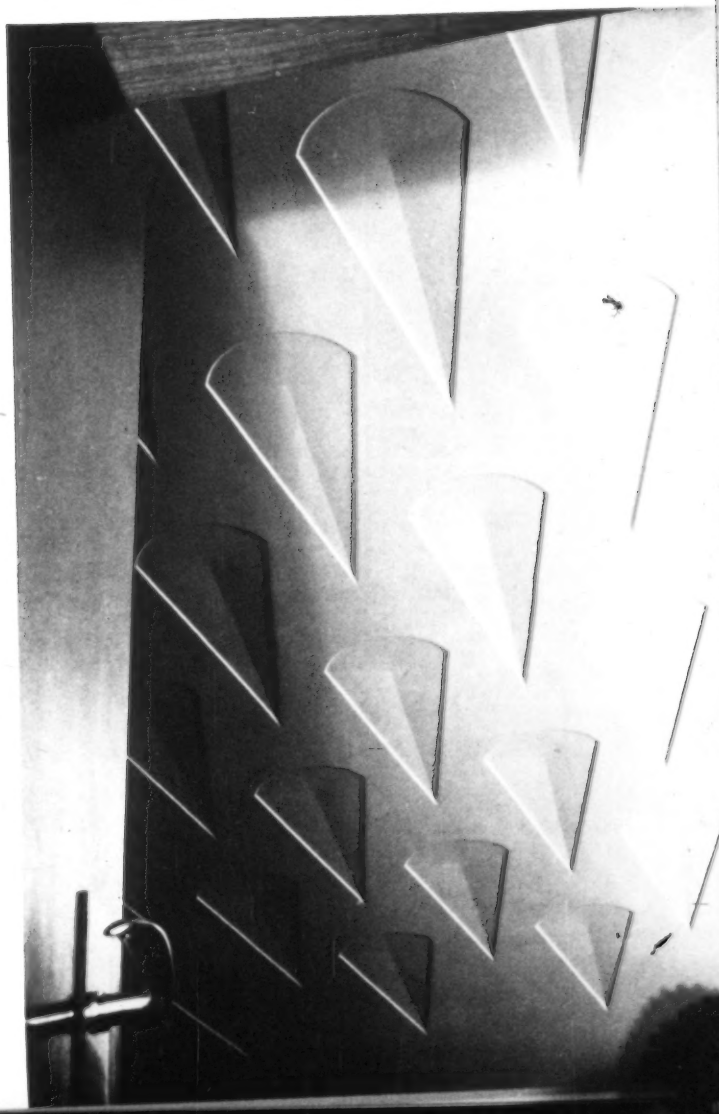
decorator is out—a collector of pretty things, he usually revealed his fundamental lack of sympathy with architecture by trying to obscure it with complicated drapes, unless he has 'gone contemporary,' in which case he will endeavour to obscure it with pot plants and Venetian blinds. His place must be taken by interior designers whose training and experience have, for a greater or less period of time, been those of an architect. We have, in Britain, some distinguished examples of architects who have turned interior designer, and of leading offices which maintain architectural assistants specialising in interior work. But this kind of convertibility is all too apt to open the road for failed architects to become second-rate interior designers. Genuine architectural expertise in interior design requires a period of common education before the two inseparable visual disciplines assume their distinctive characters, but at present no leading architecture school has an interiors course built into its curriculum, and neither of the leading metropolitan design schools has a live architecture course under its roof.

A firm lead from architects seems to be as necessary here as in dealing with the furniture trade, which will have to supply much of the interior equipment to be used. At present the British furniture industry offers the best craftmanship for money in the world, great expertise in the employment of traditional materials such as wood and leather, and a complete absence of any national character in design, except in the maintenance of traditional formulae. It is astonishing that an industry so heavily mechanised should have shown so little interest in deriving a style from mechanical inspirations or the exploitation of mechanical techniques, and if it is maintained in defence of the industry that its £115,000,000 annual turnover depends on a mass-market that will not have advanced designs, there is another factor that can be set against this—and against the consciences of architects.

One firm, not a giant of the industry, has just seen fit to invest a considerable sum in the moulds for two of the most advanced chairs in the world—of foreign design. These chairs are not expected to sell on the mass-market, but in the contract field, which is almost entirely within the control of architects, or specialist interior-equipment firms. Here is a case of architects getting what they want, when they want it, but not until nearly six years after it was designed, largely because most of them were too far out of touch with developments in furnishing to realise that it could be had.

The need for greater architectural expertise in interior design cuts both ways—the experts must acquire more architectural sensibility, the architects must acquire, or be prepared to pay for, greater expertise in interior design. The present dichotomy between the two disciplines will not be healed by compromise, but only by something bold and full-blooded, by architects who genuinely understand the problems of interior design working in creative collaboration with interior designers who fully appreciate the nature of architecture.



right, kite shaped coffering of the suspended ceiling in the visiting directors' room; above, exterior from Queen Victoria Street of the recently completed building.

Bank in Queen Victoria Street, EC4

architect: John Wright

These interiors for the Bank of London and South America are in refreshing contrast with the traditionalism of the building itself.

The main rooms are on the third floor, consisting of Directors' offices, board room, library, luncheon room, a small private dining-room and a waiting-room, leading off a central V-shaped

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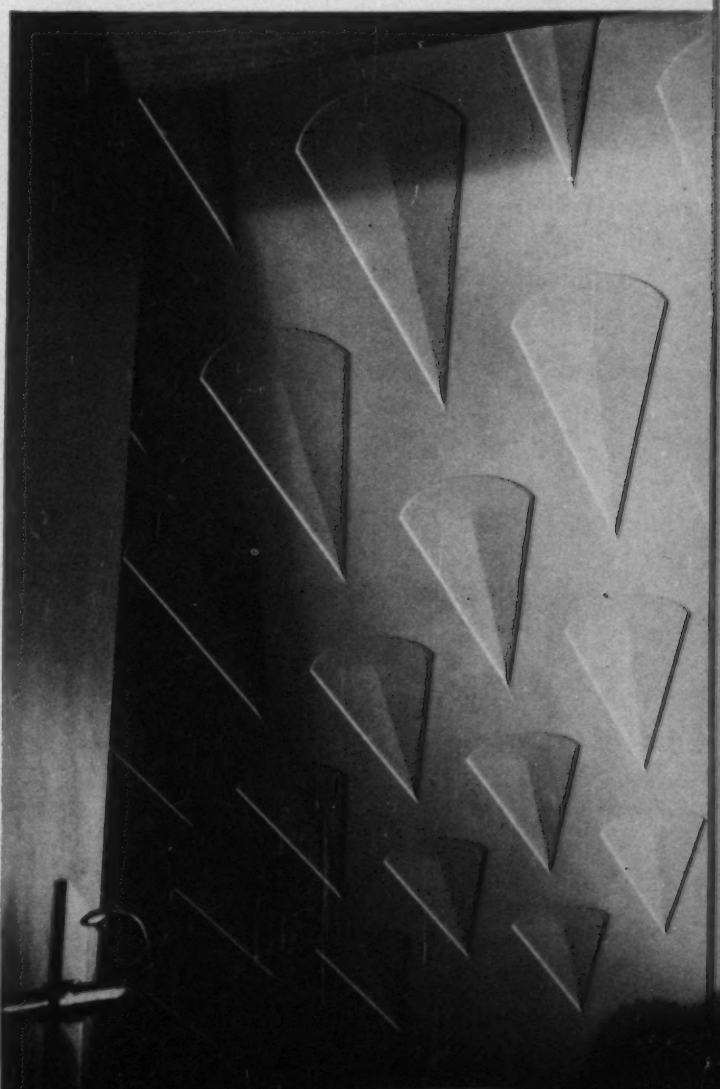

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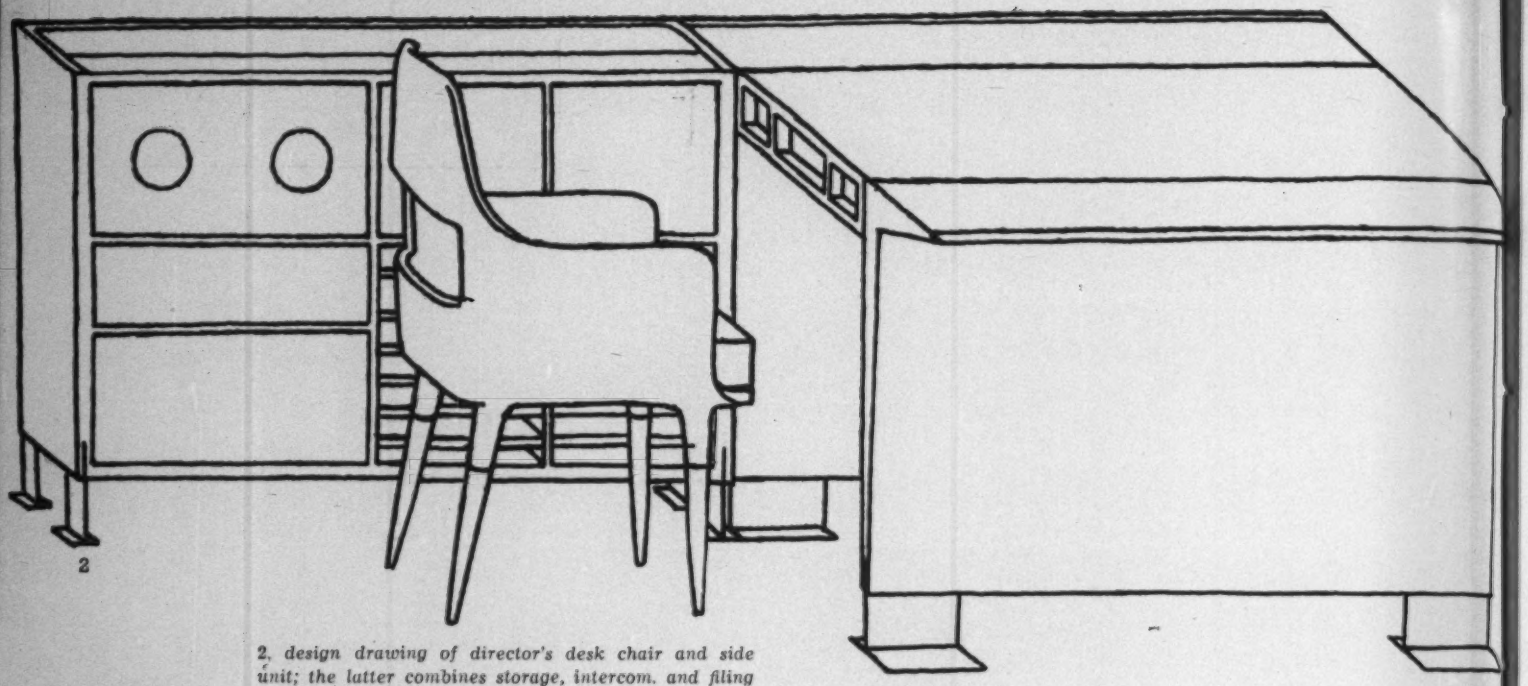

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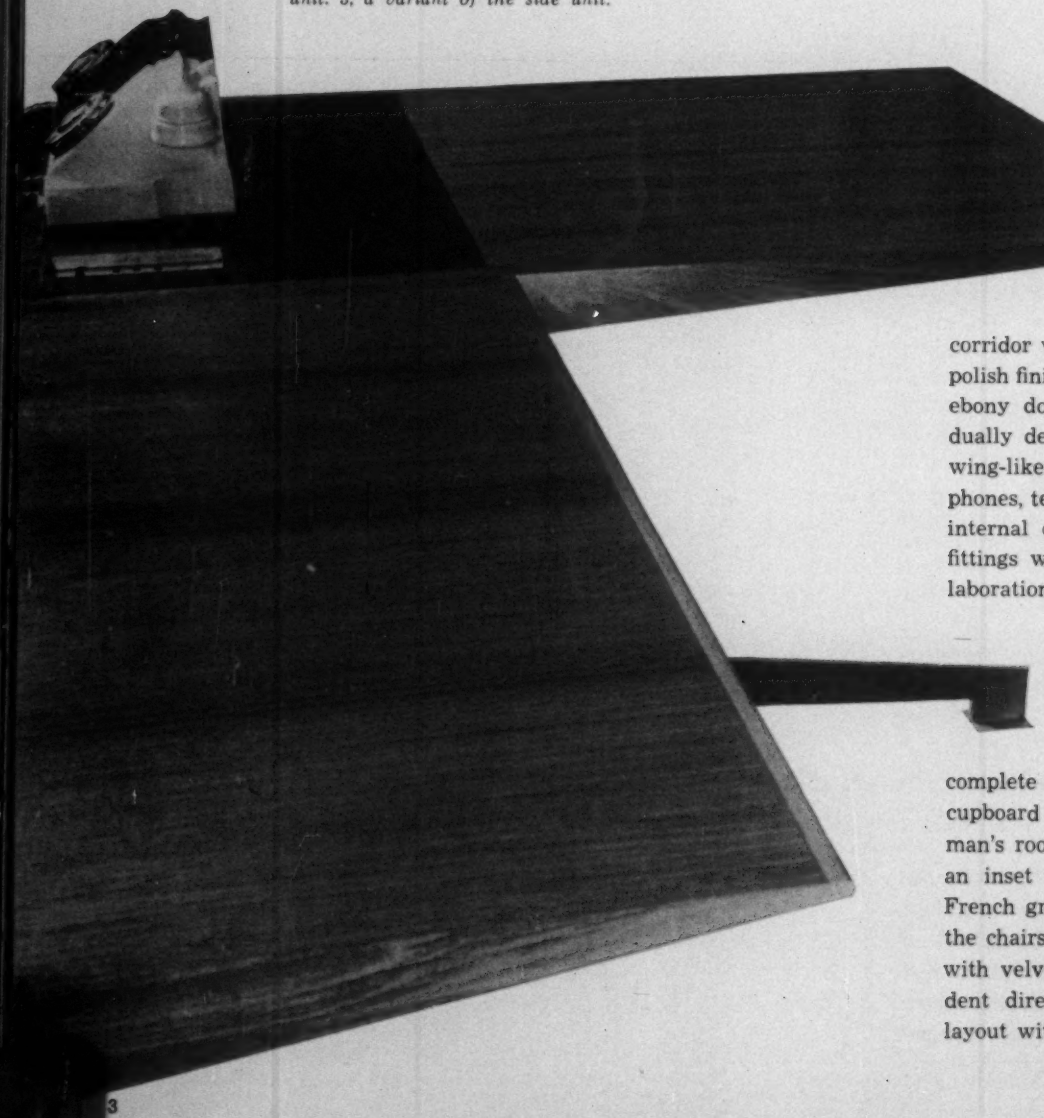
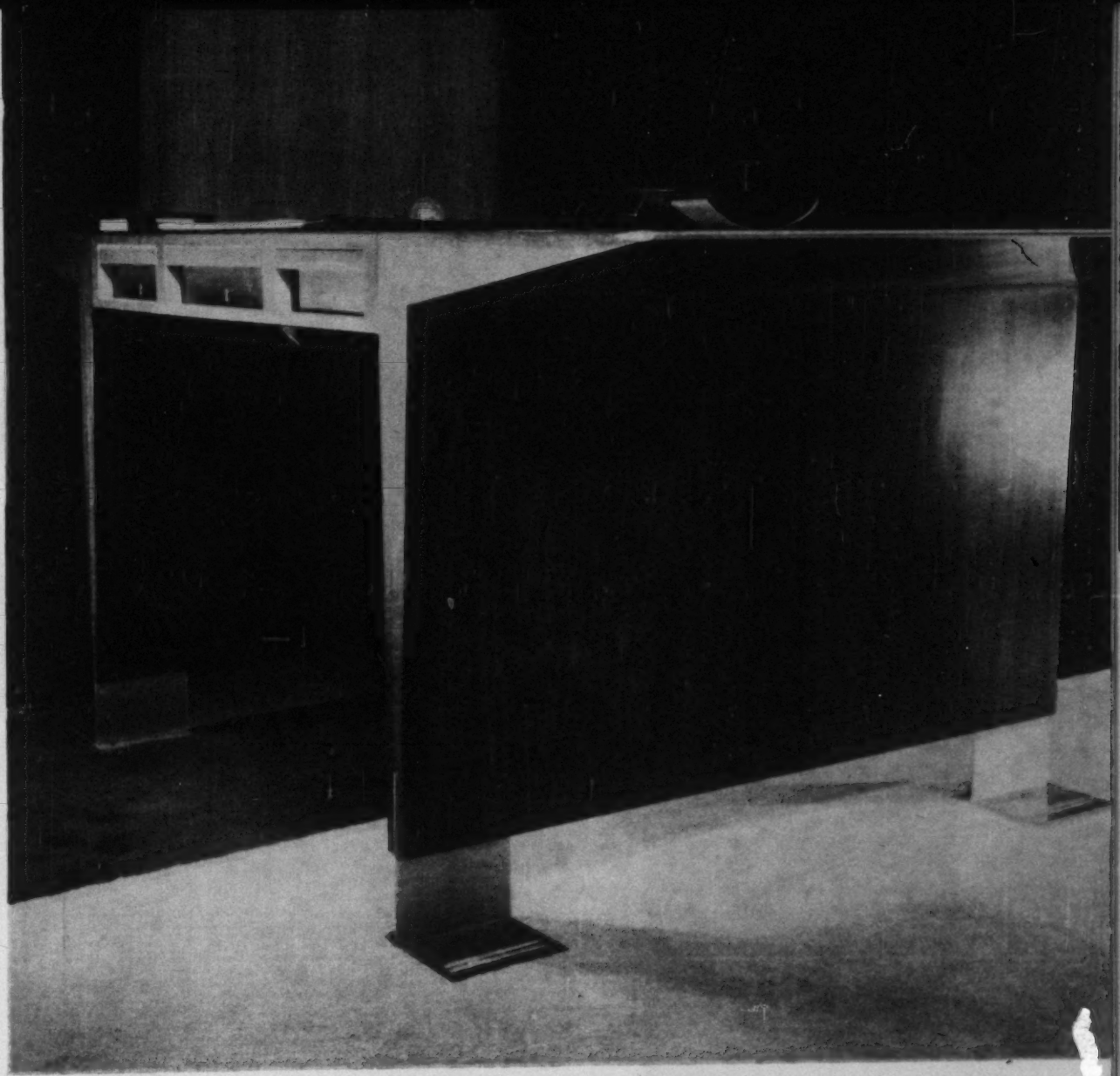
2, design drawing of director's desk chair and side unit; the latter combines storage, intercom. and filing unit. 3, a variant of the side unit.



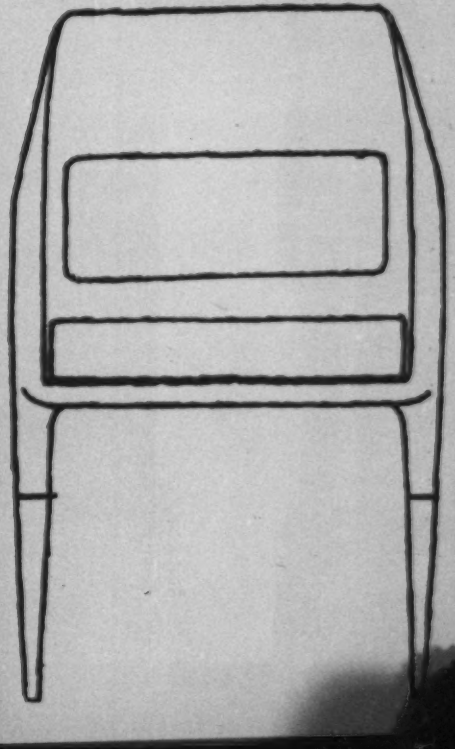
3

corridor which is panelled in aspen with velvet polish finish and incorporating recessed Macassar ebony doors. The Directors' rooms are individually designed, but similary furnished, with a wing-like desk with a side unit to take dictaphones, telephones and a press-button system for internal communication; all the furniture and fittings were designed by the architect in collaboration with the Board. Each office has a complete wall unit consisting of a bookcase, coat cupboard and a private compartment. The chairman's room is lined in English pear wood with an inset of white ivory: the furniture is in French grey walnut with silver metal trim and the chairs and sofa are in green moroccan hide, with velvet curtains to the windows. The resident director's room has similar fittings and layout with the wall unit covered in very dark



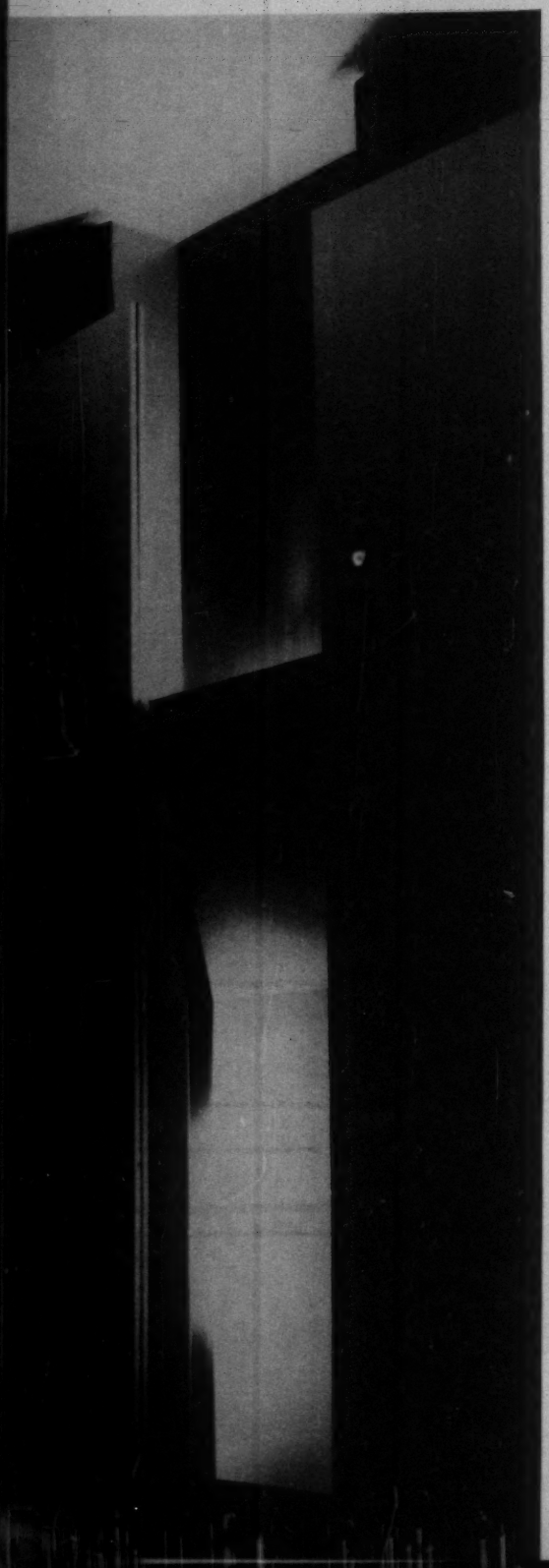
4, detail of director's desk. 5, the desk as installed in the small directors' room. 6, design drawing of director's chair.

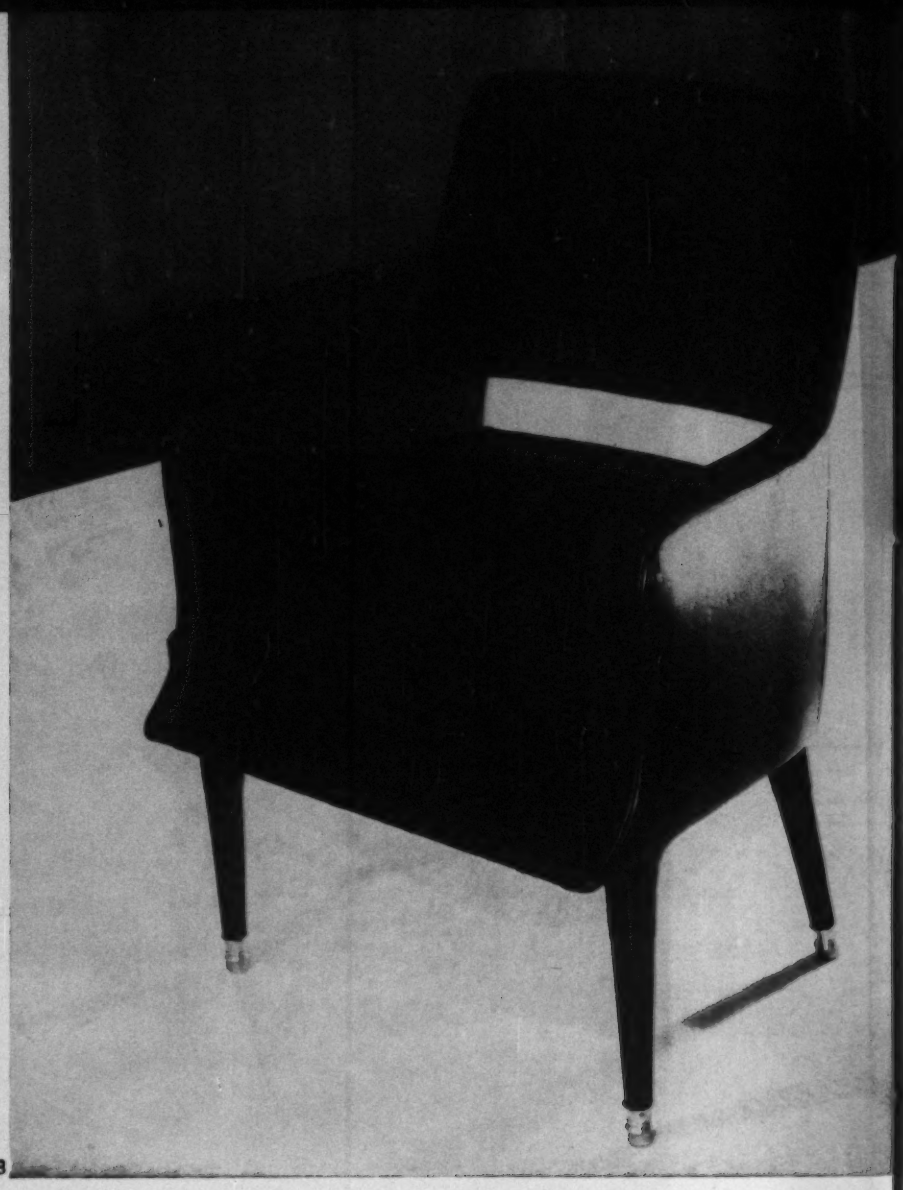
BANK IN QUEEN VICTORIA STREET, EC4



7, subsidiary lighting in third floor corridors concealed in the panelling. It will eventually illuminate statues which are to be put in the recesses.
8, chair from a director's desk unit.
9, directors' board room; the table is bog oak with leather inlay.

7





8

blue goat skin, to set off a display of Greek vessels. The walls are covered with a new matt-sprayed plastic in off-white, and the curtains and ceiling have a simple abstract design, which is picked up by concealed lighting from the walls and ceiling.

The second floor is taken up by executive offices, all lined with coach-painted panelling, with the desks and side units again designed by

9

10

11

10, wall unit in resident director's room; it is panelled in dark blue goatskin.
11, committee room on executive floor; the table has leather inlay and the chairs are corduroy covered.
12, executive type desk, normally made of teak.

the architect. The light fittings were designed by the architect's office in collaboration with G.E.C. and are made up from laminated glass which diffuses and spreads the light. In addition to the normal office fittings, a flush fireproof cabinet is fitted in each wall unit for valuable papers.

The remaining floors are general offices and public space and are treated in a similar manner, but using standard furniture. The staff restaurant and recreation room is on the seventh floor. There is a bench type seat opposite the large windows, for coffee, with a magnificent view towards the Thames. The furniture is in light braced metal with tan and jade green upholstery, and the woodwork is lacquered beech: the

12

13

floor is of Canadian maple. In the recreation area are cane easy chairs and ebonized-wood furniture, with black and white striped Swedish rugs on the floor. A mural by Robert Buhler, depicting the South American landscape and peoples, runs along the whole of the length of the back wall, which is fitted with banquette seating.

15

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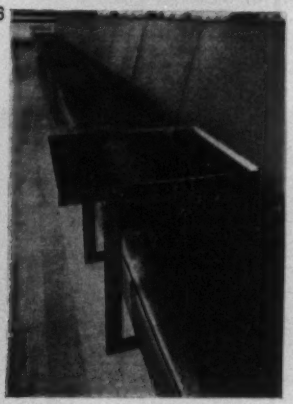


13, first floor corridor. 14, restaurant with mural. 15, seventh floor recreation space. 16, detail of restaurant.

14

DAVID M. WALKER

LAMOND OF DUNDEE

The work of Charles Rennie Mackintosh has received so much publicity that it has become usual to regard the modern movement in Scotland as purely a Glasgow affair. That is not a correct assumption: for there was an active if less uncompromising modern school in Dundee, and as will be shown, it was to London rather than to Glasgow that it looked for inspiration.

Dundee is an industrial city of some 180,000 souls with a greater reputation for ugliness than is warranted, though the record of local architects since 1840 had, with certain exceptions, been bad. The exceptions were the Soane Medal winner James Maclaren (1829–93), like his namesake a 'rogue,' and John Murray Robertson (1844–1901), who was first an exponent of Thomsonian Greek, but about 1877 broke with the Gothic, Scots Baronial, and Italian styles then current, in favour of something more comfortable and less expensive, settling finally on his own version of the 'Cadogan' style after experiments with half-timber based on what he had seen in North Germany and the Low Countries.

It was from Murray Robertson's office that the best architects of Dundee's Edwardian era came—D. W. Baxter, James Findlay, Donald Mills, Godfrey Shepherd, and David Smith. None of them attempted anything with an art-nouveau flavour; the architects who did venture on this difficult ground, apart from the authors of the School Board buildings, to whom this article is devoted, came from the offices of Charles and Leslie Ower, exponents of extreme Victorianism, and Thomas Martin Cappon, whose outlook had been more moderate. The office of C. & L. Ower may seem a puzzling birthplace for such a movement. Its creation was in great part due to William Gillespie Lamond (1854–1912), the assistant of Charles Ower from about 1896 to 1898, of Thomas Martin Cappon from 1898 to 1904, and of James H. Langlands from 1904 till his death.

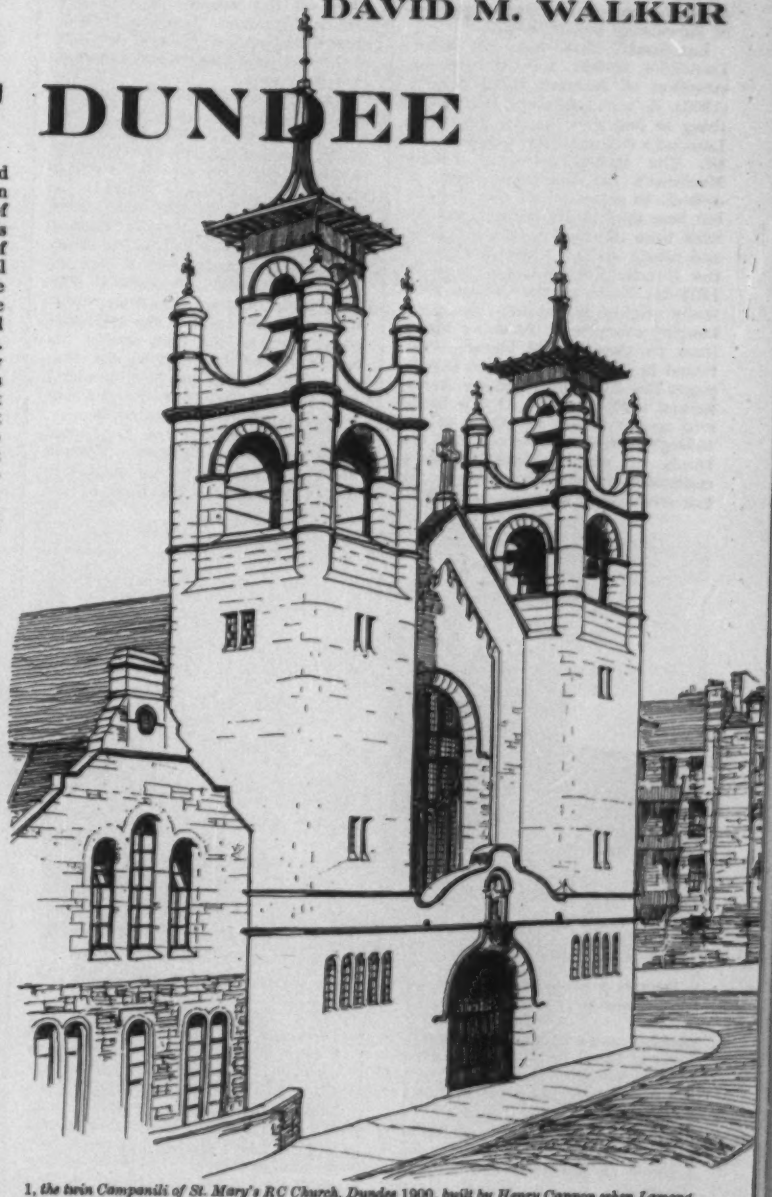
W. G. Lamond was born at West Calder on December 4, 1854, son of Robert Lamond, who was factor there. It has not been possible to get much information about his early life, but he finished his schooling at Dumfries, and there he was apprenticed, leaving later to spend a period in the office of an architect in Northampton.[1] About 1880 he set up in business at Arbroath as an architect and civil engineer. Arbroath was still a prosperous textile town, though the industry of the surrounding area was slowly dying. What induced him to go there is not known. His first known major work was the Arbroath Water Tower of 1884, a favourite butt of the Saltire Society, which has twice unwittingly awarded Lamond its damnation. The history of the building is too complicated to be related here. The first designs had been in a 'Moorish or Spanish style of architecture.' They were then changed to 'Scotch Baronial or Castellated.' Lamond made the plans but was not allowed to supervise their execution. The whole ended in a tangle of litigation and a building without promise, except perhaps for the great bold sweep of the plinth.

[1] I could not find out which offices these were.

The little information to be had about Lamond's work in Arbroath in 1884–94 does not give much hint of his work after 1893, except in details such as the roof of the schoolhouse of St. Vigeans which is of an unusual shape, and an extension of the turning works at Friockheim where he lived, a one-time industrial village a few miles from Arbroath. On this little building, recently demolished, Lamond lavished all his abilities. It was built of white brick and much trouble was taken to work the slight differences in colour into patterns. Unfortunately the project ran into financial difficulties, and so Lamond, then aged about forty-two, decided to leave Arbroath and take up employment at Dundee. He applied to Charles and Leslie Ower, a firm with an enormous business. Charles Ower, the elder brother, was a rather difficult, but generous and well-meaning man with a genuine love of architecture but little faculty for design. His taste was for extreme Victorianism, but he appears to have quickly recognized Lamond's ability and given him considerable opportunities for design, opportunities which no previous assistant of his had been granted. Lamond designed for him the Pearl Insurance Building adjacent to the Dundee Royal Exchange, in a somewhat riotous Gothic style.[2] In spite of disagreements Lamond seems to have enjoyed his stay with Charles Ower, but unfortunately Charles and Leslie split partnership, to the detriment of their business. Lamond left them and joined the staff of Thomas Martin Cappon.

Cappon was younger than the Owers, and never subscribed to the extreme rigours of the Victorian style. In Cappon's office the chief assistant was a brilliant young man called Harry East, who, I have no doubt, influenced Lamond strongly. Cappon was then completing three important jobs, the Panmure Arms Hotel at Edzell, 2, begun in 1895 and now burned down, the smaller, extremely up-to-date Ramsay Arms Hotel at Fettercairn, begun in 1896, and St. Patrick's R.C. Church, Dundee. It had originally been intended, when the church was begun in 1897, to have gables on the confessionals, close to the main walls; but at the last minute they were scrapped in favour of parapets with an unusual flattened curve. The first published appearance of this motif which I can trace is in Hall, Cooper and Davis's design for Chesterfield Schools and Baths illustrated in the *Building News* (to which Cappon subscribed) of February 18, 1898. On May 20 a drawing of St. Patrick's with the revised confessionals followed in the same journal. Who suggested the alteration, and whether that is the source, or whether it was developed from the details of the Panmure Arms, as seems reasonably probable, it is impossible now to say. The motif made a third appearance in print in 1898 in Inigo Triggs's Academy design for a golf club house. At any rate, it became the motif by which Lamond's hand could most readily be recognized. In 1900 Cappon built, 1, the twin Campanili of St. Mary's R.C. Church, Forebank, Dundee. Lamond was now chief draughtsman, East having emigrated, and presumably prepared most of the drawings. It is supposed to have been based on an Italian model according to an anecdote about Cappon sending a postcard of it from an Italian holiday, but an important influence on the design was doubtless Harrison Townsend's first design for the Whitechapel Art Gallery published in *Academy Architecture Illustrated* (to which Cappon also subscribed) of 1896. No-one now remembers Lamond discussing Townsend, but it is to Townsend that most of Lamond's detailing owes its origin. At St. Mary's appear the large simple convex mouldings, and the softly rounded corners of which Lamond was so fond. The parapet motif reappears in a rather ugly extended form over the main doorway. Nothing else from Cappon's office between 1898 and 1904 is so lively as the campanili of St. Mary's, but Lamond was also engaged on the designs of the Wishart Church (1901) in a free Perpendicular style owing something to St. Patrick's, the Whitehills Hospital, Forfar (1899), the Airlie Monument at Prosen which derives partly from the Arbroath Water Tower, and partly from the House of Airlie, some alterations to R.C. schools and the R.C. church at Broughty Ferry, 1904, red brick, but delicate and lively in detail.

[2] The style of the British Linen Bank at the West Port suggests his work, though the uncertainty of the date of Lamond's departure makes it difficult to be sure whether it is his hand or his influence we see in it.



1, *the twin Campanili of St. Mary's RC Church, Dundee* 1900, *built by Henry Cappon when Lamond was his chief draughtsman.*

However, by 1903–4 Cappon was not so busy, and Lamond foresaw that in a short time Cappon would be able to handle all the work with John Mather and the apprentices. He also foresaw that, with the Education Act of 1901 raising the school-leaving age, the Dundee School Board, whose buildings were then taxed to the utmost, would soon have to undertake an extensive building programme, and accordingly applied to their architect, James H. Langlands, for employment. Langlands' work is worth some notice; the original School Board architect was James Maclaren's nephew David, whose style was entirely dependent on his uncle's mansion of Ashludie. Langlands, his assistant and successor, worked first in an expurgated version of this style, then tried something of his own; but at North Clepington School (1892) he gives us

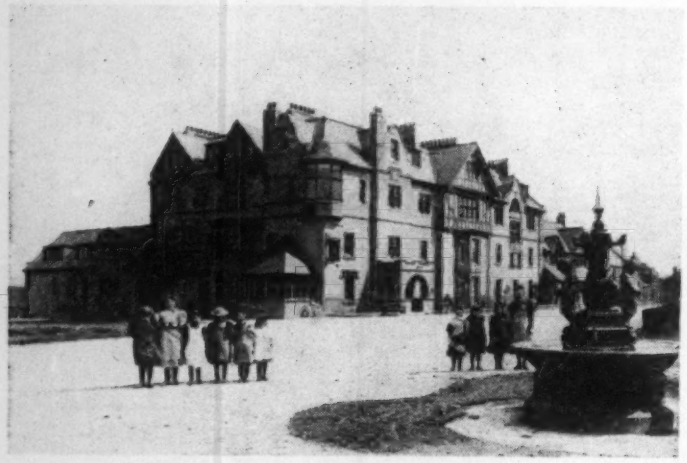
an early, rather hesitant, foretaste of Edwardian neo-Palladian.

Langlands' first big job after Lamond's arrival was the reconstruction of Ancrum Road School (1905), 3, quite different from anything he had done before; and with Lamond's characteristic parapet motif. The incorporation of David Maclaren's old buildings made it difficult to get a unified composition but here appear the staircase towers with rows of small square windows and nearly all the other elements of the Dundee School Board style of 1904–14. None of the details were really original inventions. The overhanging canopies of the doors derive from Townsend's Cliff Towers, illustrated in the *Studio*, Vol. 13 (1898), pages 239–240, and *Academy Architecture*, 1897, page 79. At this house also appear pillars like those of the railings at Stobswell School, and the bands of small square windows, contrasted in the schools with the tall schoolroom windows, a contrast perhaps unconsciously suggested by some of the earlier and more experimental work of Murray Robertson, for example Ravenscraig, 1874, or 57 Dock Street, 1880. The mysterious-looking roof ventilators have a precedent in Knott's design for a Library at Newport, Isle of Wight, illustrated in the *British Architect* of January, 1901, though it is quite likely it was derived independently from Lamond's previous roof ventilators. It is also possible that an influence on the general style of the schools was Henry Sellars' Dumfries Academy (1895, illustrated in the *British Architect* of October that year) which Lamond may have seen.

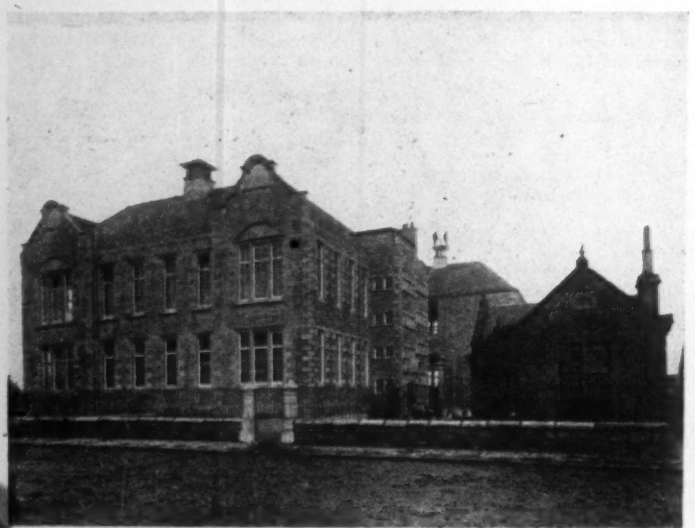
With Stobswell School (1907), 4, came the big opportunity. It was built on a clear if rather constricted site at a cost of £25,280. The detailing is substantially the same as Ancrum Road, but the whole building is much bolder, richer and more confident in handling. I cannot suggest any precedent for the design, other than that it is the scheme of Ancrum Road vigorously reorganized. The design was worked out from many studies on the scale of one sixteenth of an inch to the foot, finally enlarged to vast drawings on the scale of half an inch to one foot on which Lamond and the other draughtsmen worked lying on their stomachs.

In the same year the Langlands office took part in the competition to graft a façade on to the singularly dull newly erected buildings of the Technical Institute, 5, and won it with a design by Lamond which is basically Palladian (Renaissance appears to have been stipulated) but with all the rules violently broken. It is certainly not a successful building, but the infringements give something of an analysis of the methods by which Lamond secured his effects. The façade is fifteen bays wide with narrow pedimented end bays, and a three-bay centre with a big entrance arch which has a broken pediment canopy. The centre breaks up above the level of the main building and has a high pediment supported by outrageously tall giant Ionic columns intermittently rusticated at the bottom half, it seems, to disguise their height, and half to prevent the order shooting off the building. Along the attic storey run utterly crushed baby columns of the same order, springing several feet taller in the higher centre; that is three different sizes of the same order on the one front. Great play is also made with keystones, dropped below the level of the bottom of the cornice in the attic, and springing to the next string course on the main floor, so that the whole design seems in startling conflict.

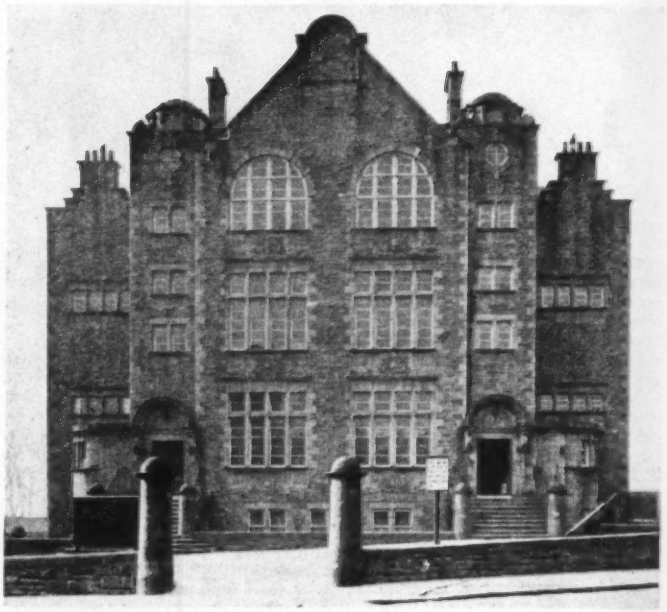
In June, 1907, the managers of St. Salvador's Episcopal School intimated their intention to close their school, and the Dundee School Board were unexpectedly obliged to build a new school, 6, in Dens Road. This was a much better site than Stobswell, but unfortunately the cost of the Stobswell School had stirred up immense activity among busybodies, and although the School Board defended their architect, Dens Road had to be simpler to avoid further controversy. There is little detail, and the building relies for its effect on the grouping of the staircase towers developed from the two previous staircases, and the roof between. If any influence was at work in the design, it was most probably that of James Findlay and David Smith's remarkable design for the Caird Cancer Building of 1905, now hidden and spoiled, with high roofs of a better shape than that of Dens Road. The Dens Road school has, in fact, several serious faults; it lacks the deep eaves of Stobswell, the proportion of the ventilator is clumsy, the windows of the staircase towers are not too well managed, and the design of the



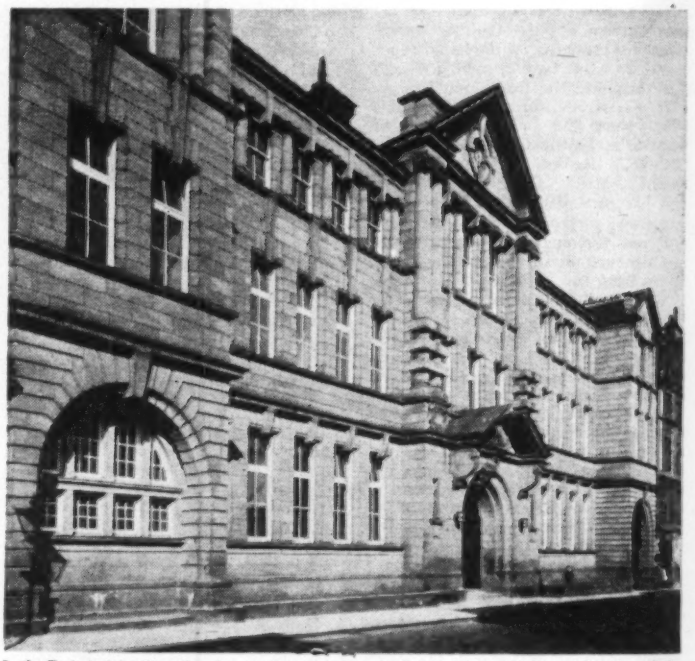
2, *Panmure Arms, Edzell, now burnt, begun by Henry Cappon in 1895 at about the time when Lamond joined the firm.*



3, *Ancrum Road School, Dundee, 1905 the first big job done by the Dundee School Board after Lamond joined it.*



4, *Stobswell School, Dundee, 1907; the same motifs as Ancrum Road but made up here into a personal and sensitive style.*



5, *the Technical Institute façade, won in competition by Lamond in 1907. Rogue Baroque of the Halsey Ricardo type.*

chimneys does most damage of all. Nevertheless, the building has a more powerful appearance than illustrations suggest.

However, at the Eastern School, Broughty Ferry, 7, all the faults of the Dens Road design were eliminated, except perhaps for the want of a cornice under the roof. It is the Dens Road design reorganized; the end parts have been dispensed with, and the staircase towers widened with narrow projecting bays towards the centre. The rhythm may have been suggested by Mackintosh's Scotland Street School in Glasgow. Behind the front rises an enormous second roof, there being a third storey at the back, which makes the school, seen from a distance, impressive out of all proportion to its size, and avoids any of the central weakness of Dens Road.

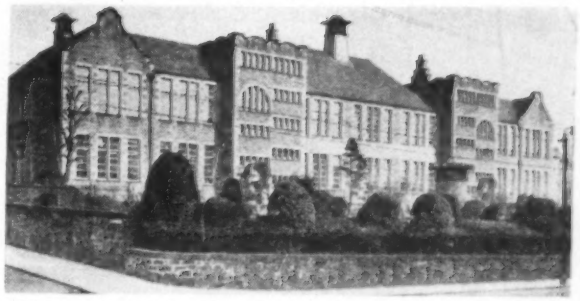
The final school of the series, Glebelands, 8, involved the incorporation of a school similar to that reconstructed at Ancrum Road, and the designs have, indeed, similarities, though Glebelands is very much bigger in scale and completely unified in composition. The design was affected by the fact that classes had to be held during the progress of the work—in the event a fatal condition as the old building caught fire on February 5, 1912, and within an hour the almost finished building was destroyed. It was rebuilt according to the original design in 1913–14.

Glebelands was the last school in which Lamond had a hand; for he died suddenly on Sunday, June 23, 1912. That the style of the Board Schools is his, there can be no doubt. It was universally adopted in all office drawings so that not even the different draughtsmen can be identified. Broadly, J. H. Langlands was responsible for the planning, the dealings with the Board and the Education Department, which was no small matter, and organizing the work of the office. Lamond was chiefly concerned with the elevations and the preparation of the drawings. The style of the schools is, I think, 'modern' rather than 'art-nouveau.' There is little in the nature of the Glasgow School of Art interiors. Fanciful lettering of a mildly art-nouveau character is certainly on most of the drawings, and on the schools too, but the big pale water-colour drawings have lettering in Renaissance frames, and no unnatural trees or spooky figures are anywhere in evidence. Like the governors of the Glasgow School of Art, the School Board desired plain building, and that with Lamond's knowledge of, and inclination for, modern work, set the style. The School Board, according to the Triennial Reports, was very pleased with its new buildings despite the fact that they must have looked distinctly unfamiliar to Dundonians at that time. Was this remarkable receptiveness perhaps the influence of Professor Patrick Geddes, whose advice the School Board occasionally sought? It would add yet more interest to Lamond's remarkable schools.

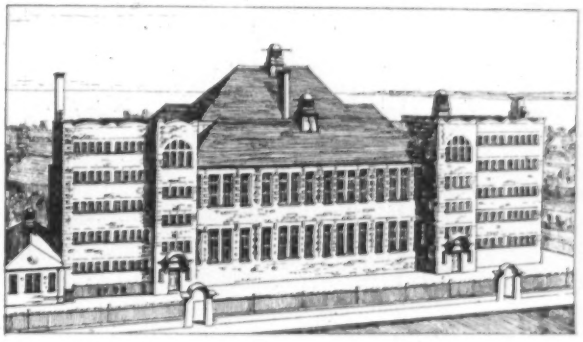
[3] A final note on the other work of the firm, and Lamond's other work and influence, will not be out of place. Langlands also built the much smaller St. Joseph's R.C. school in the same style, altered one or two others, and made an unsuccessful competition design for Kingsway Special Schools, the drawings for which still survive. Of houses, some follow a style similar to the schools, as No. 13 Lammerton Terrace, and some are white harled with light timberwork. But on the whole the schools are very much more successful than any of the houses. Lamond did several jobs on his own account in Friockheim, the biggest the large and handsome schoolhouse. His weekends and evenings, however, were chiefly spent in helping several architects with whom he was friendly; his influence if not his hand is strongly in evidence in Druimbeg, 1909, by Edward Tough for Allan Robertson. Most of his spare time was spent for an architect outside Dundee, believed to be somewhere in the south; but his name and their location are now forgotten; they certainly should not be hard to recognize. Lamond remained friendly with nearly all the old apprentices at Ower's, and Charles Soutar, Patrick Thoms and William Gauldie all show his influence. The case of Patrick Thoms is rather different from that of the others because, with his partner William Wilkie, he built many houses with interiors of a stronger art-nouveau flavour, and many of his drawings have similar characteristics to Mackintosh's. Most of these houses have been redecorated but fortunately Mr. Thoms has good photographic records of them. The style, however, did not survive the first World War, even though at first it was unaffected by Lamond's death, the unexecuted drawings for the Harris Academy prepared by Mr. J. H. Langlands, Jnr., showing little change of style; but by the 1920's it was dead.

acknowledgments

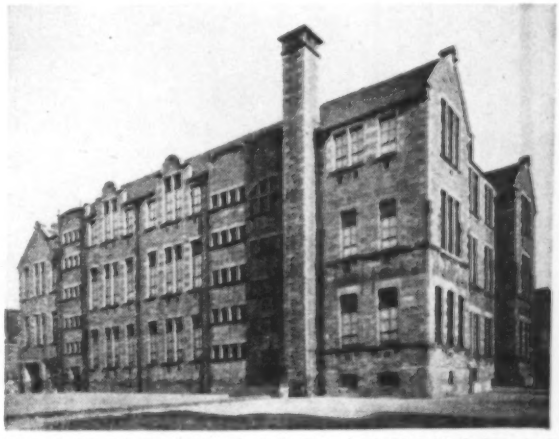
The author would like to acknowledge the help given by Mr. J. H. Langlands, Jnr., Mr. Frank Thomson and Miss Jessie Lamond.



6, *the Dens Road School*, 1907. *Cheaper than Stobswell (see 4), and less carefully thought out.*



7, *Eastern School, Broughty Ferry.*

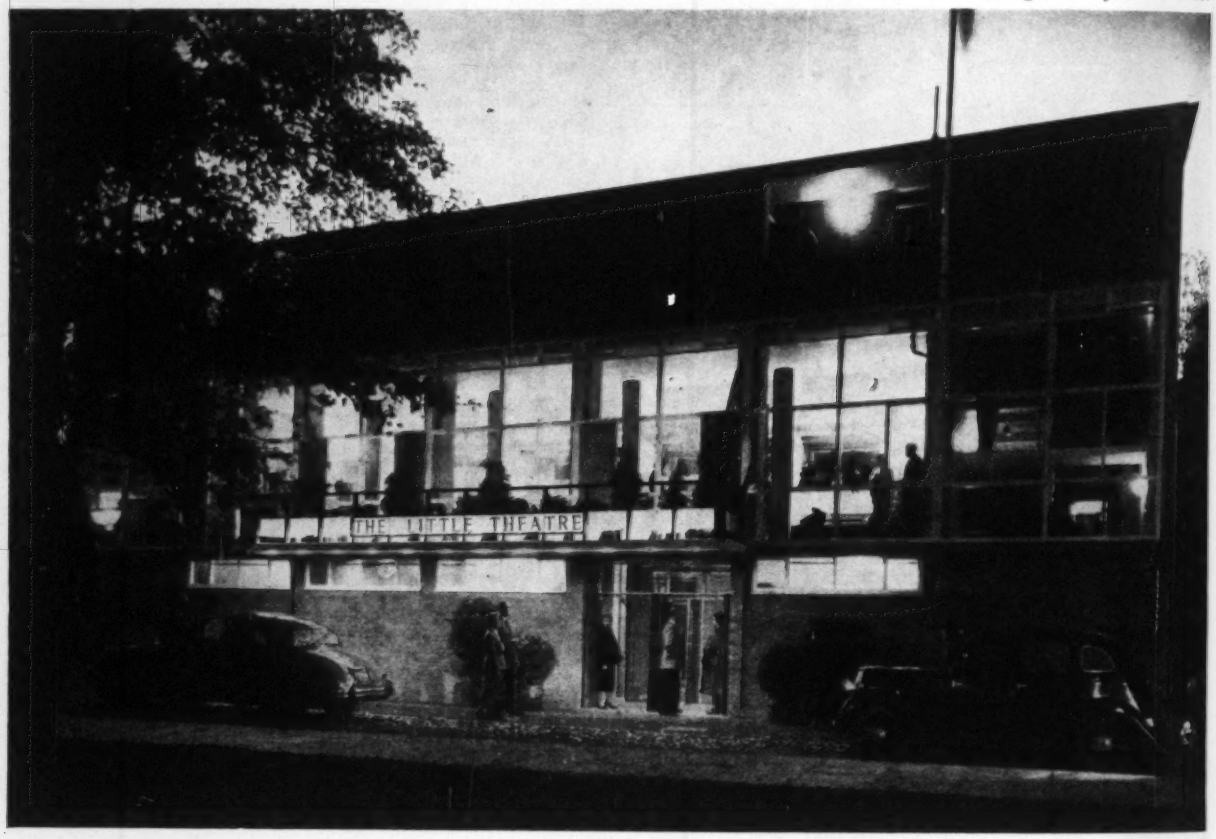


8, *Glebelands School, built c. 1908, and rebuilt after a fire in 1913–14; the last school with which Lamond was concerned.*

current architecture

recent buildings of interest briefly illustrated

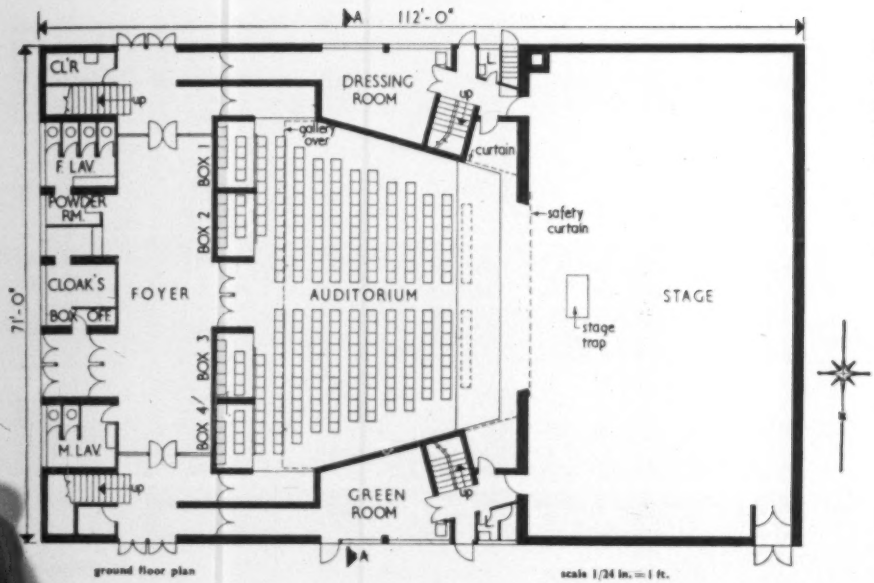
1, *night view of the entrance.*



MIDDLESBROUGH LITTLE THEATRE

ARCHITECT: ENRICO DE PIERRO

ASSISTANT ARCHITECT: PHILIP E. BELL

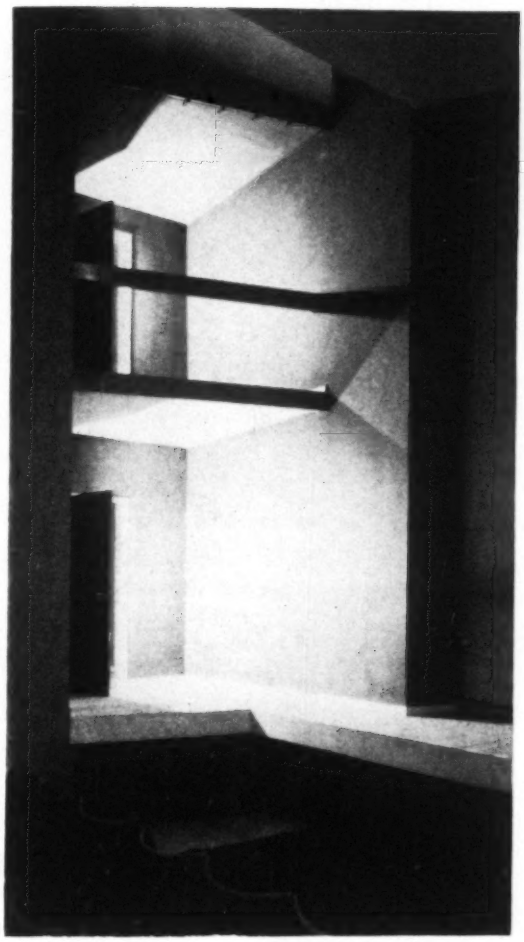


ground floor plan

scale 1/24 in. = 1 ft.

The Little Theatre is the first new theatre to be built in this country since the war, built for an amateur group who have collected the entire cost of the building (£50,000), some from their productions, some from donations from industry and local bodies, and the last £8,000 from the Gulbenkian Trust. The site is in the late nineteenth-century wooded suburban grounds of The Avenue, Middlesbrough; the theatre holds five hundred and seating arrangement of stalls and circle was chosen after various alternatives were

2, *side entrance on to the forestage, showing the orchestra pit and the permanent strip of forestage.*
3, *the stalls and circle with the projection booth in the rear wall.*



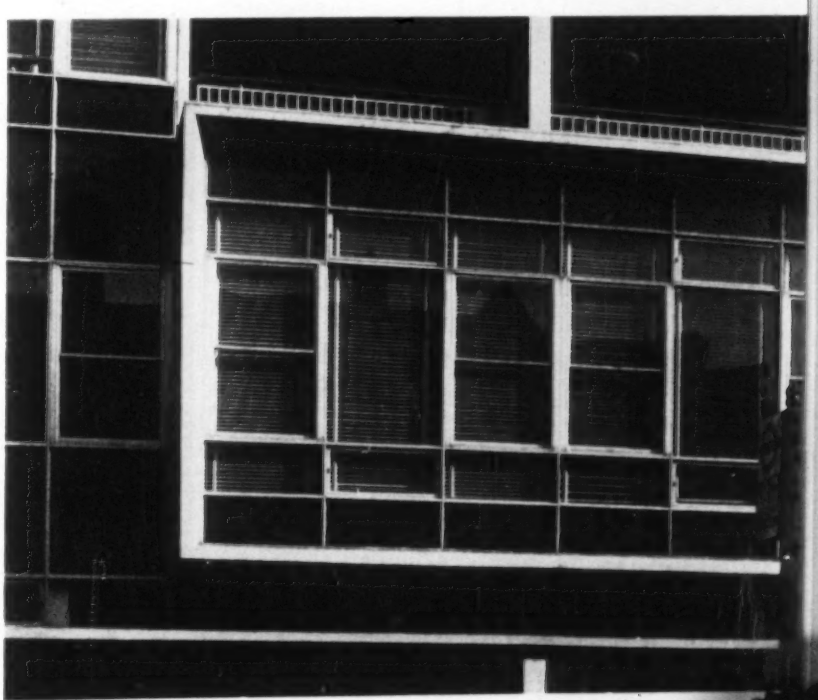
2

3

Middlesbrough Little Theatre

considered. The construction is of load-bearing brick walls and piers, with fairface sand-faced flettons outside; the foundations are an in-situ concrete strip under the structural walls and an in-situ mesh reinforced floor slab. The roof has precast soffits sitting on steel space frames covered by lightweight insulating concrete: the frames are painted yellow and the ceiling slabs black. Inside the foyer, the underneath of the gallery has white raking beams and precast floor slabs and risers in another arrangement of the colours used in the foyer: mushroom, dark grey, geranium red, dark green and yellow. At 49s. per sq. ft. the theatre was extremely cheap.

4, *detail of the two varieties of opening light; horizontal pivot hung sashes, and vertical sliding sash windows, both in aluminium.*

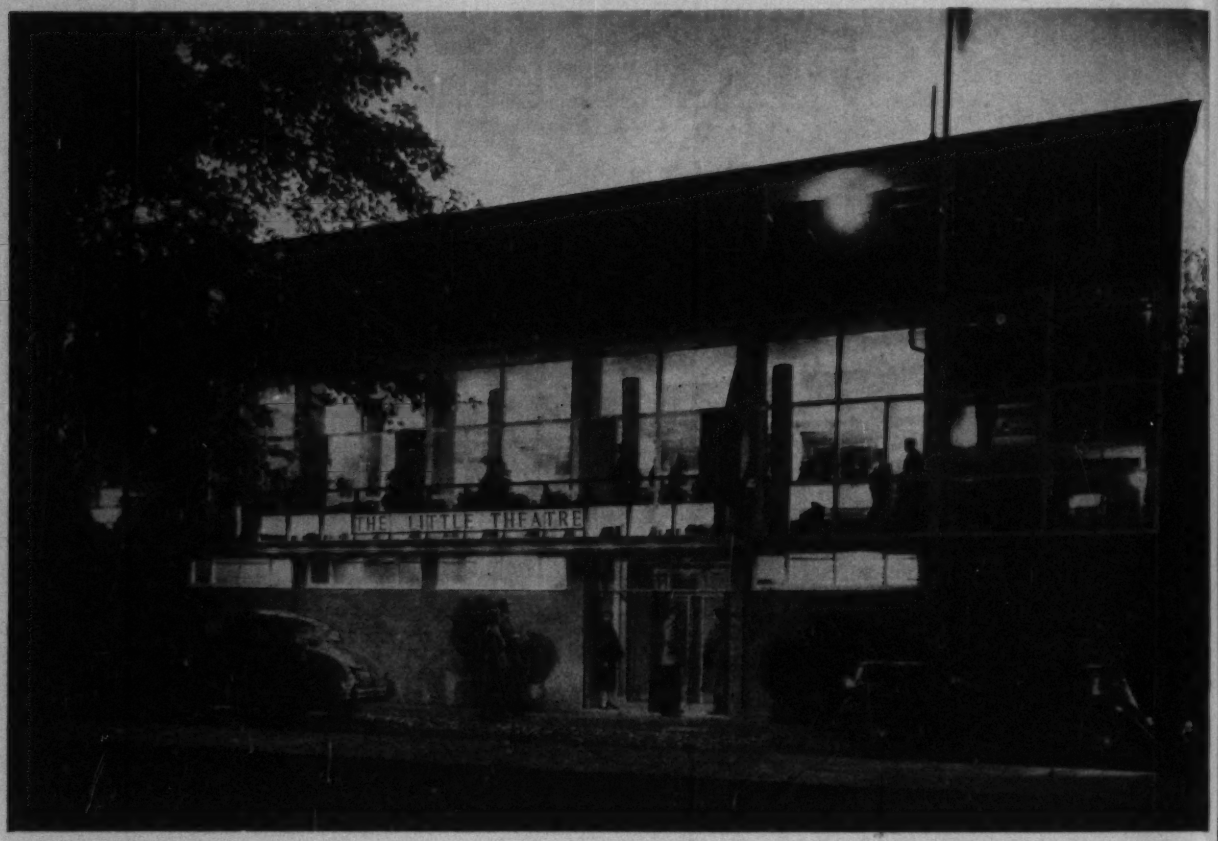


4

FURNITURE SHOP IN BROMLEY

ARCHITECT: BERTRAM CARTER

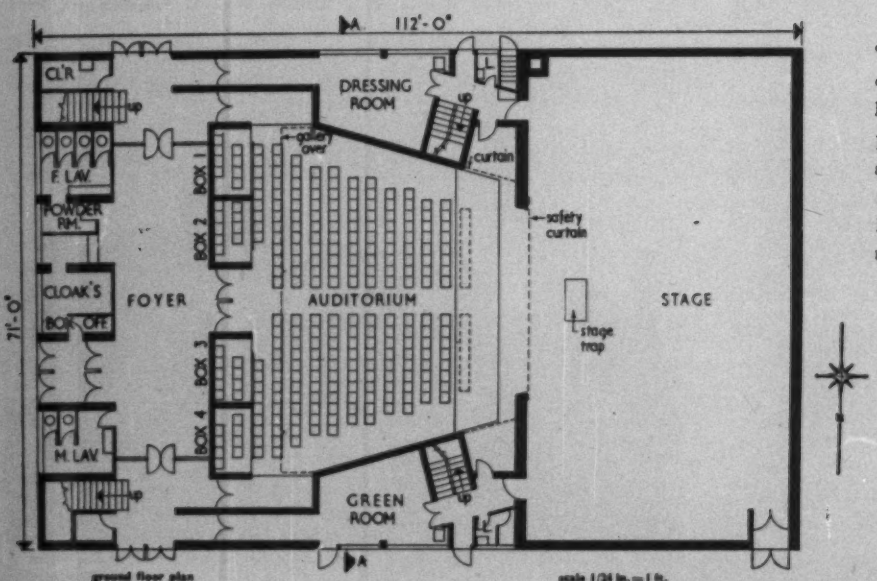
1, *night view of the entrance*



MIDDLESBROUGH LITTLE THEATRE

ARCHITECT: ENRICO DE PIERRO

ASSISTANT ARCHITECT: PHILIP E. BELL



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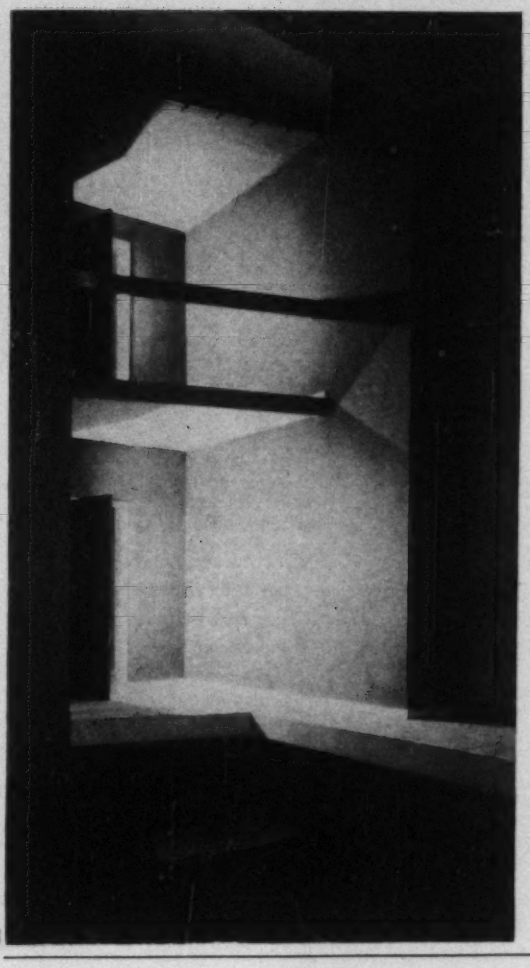

2

3

Middlesbrough Little Theatre

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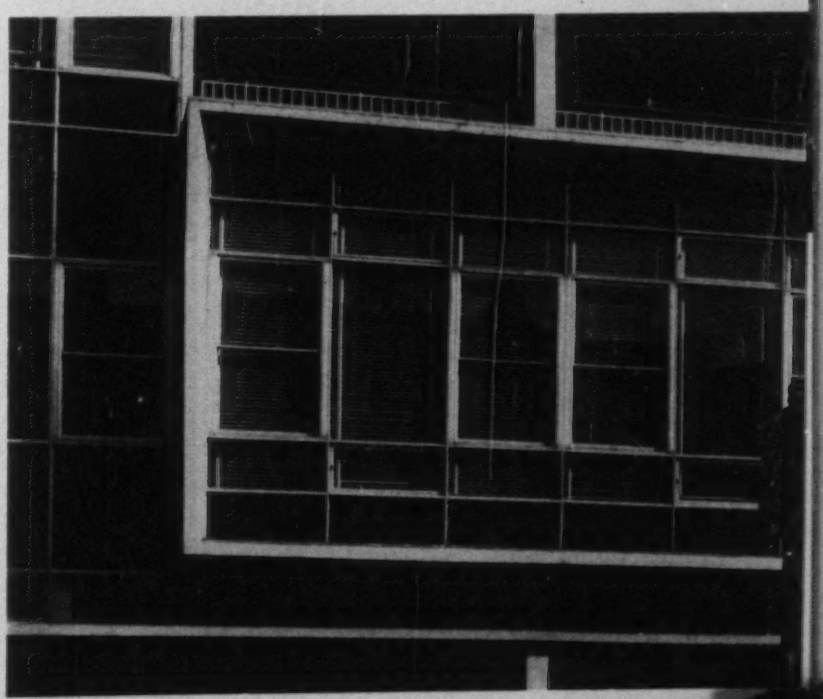
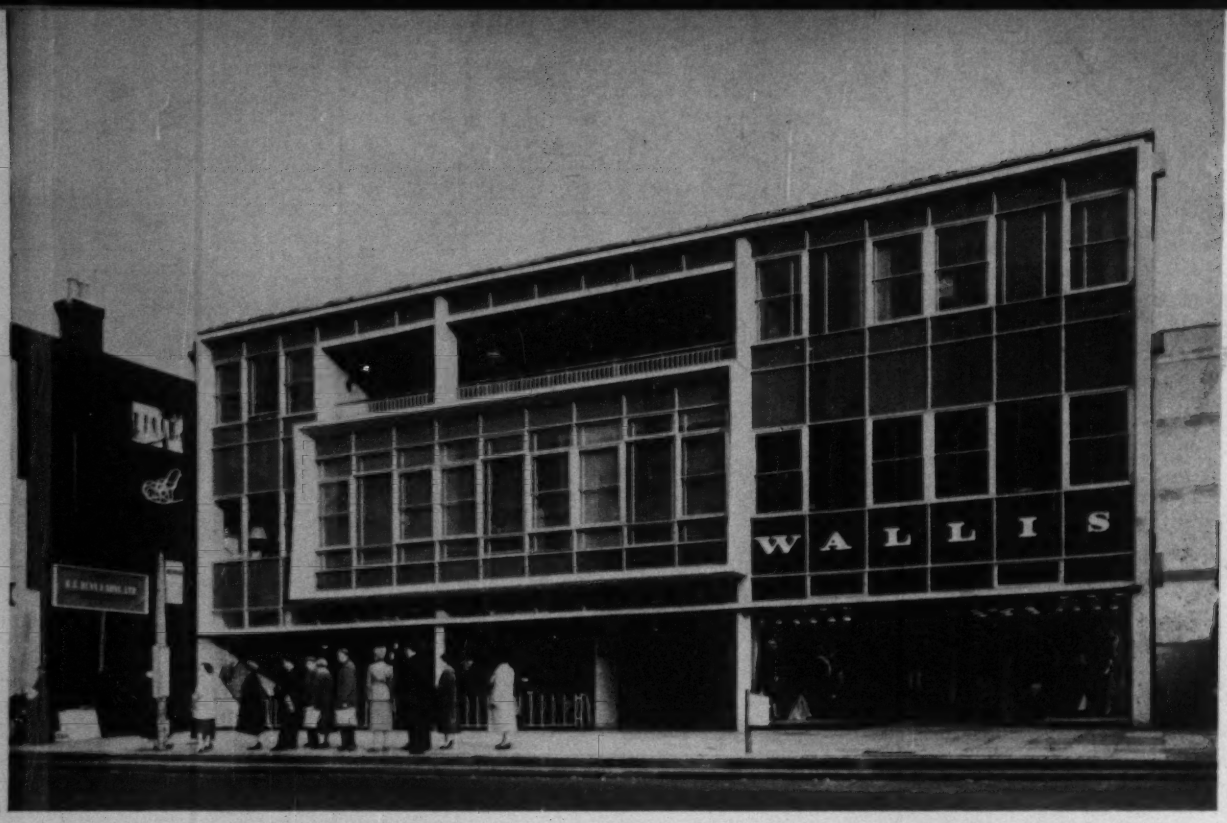


4

FURNITURE SHOP IN BROMLEY

ARCHITECT: BERTRAM CARTER



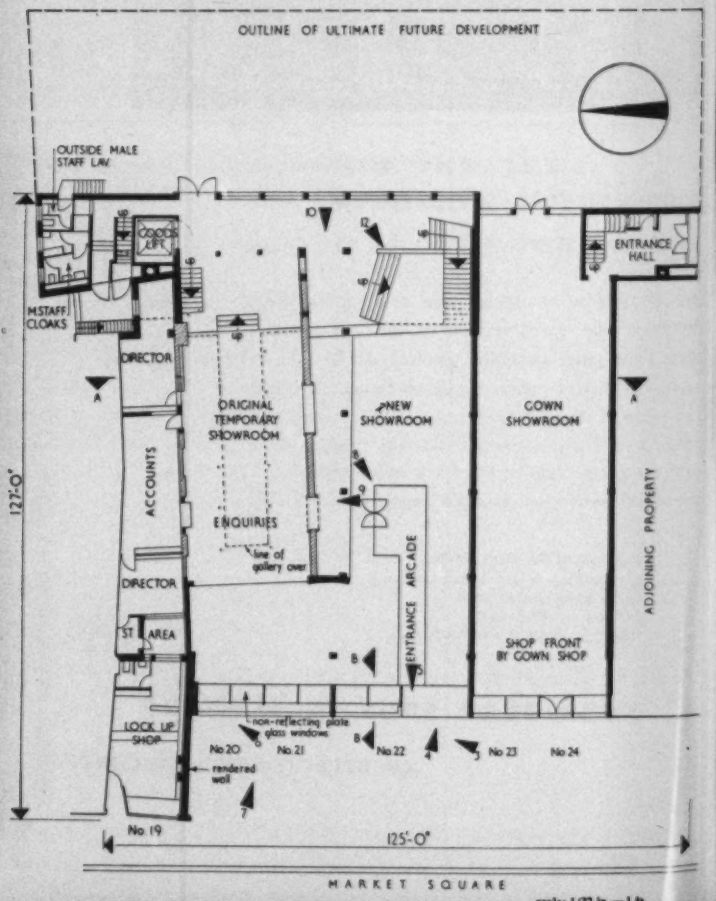
5

Furniture Shop in Bromley

5, the entrance facade, which faces Market Square.
6, the junction of the old building with the new, which gives natural light to the whole depth of the showrooms.

This is the headquarters of Dunn's of Bromley, on the east side of the Market Place, on a site they have occupied since 1710. The pre-war shop was blitzed and was replaced in 1948 by a two-storey temporary shop by the same architect, which has been retained and is now partially enclosed in the new building. The store is later to be extended, to the rear, north and to the south, when the present off centre 'picture window' will become the centre of the façade. The construction is reinforced concrete throughout; frame,

6



Furniture Shop in Bromley

floors, flat roofs and roof trusses to the north light roof. The Market Square elevation has patent aluminium curtain wall infill above 'governed by the angle of 54° 45''—Golden Section—and non-reflecting shop windows below, designed by the architect. Inside, generally, ceilings are coloured, and the finishes are subordinate to the displays of furniture, textiles, glass and china. The insulation board ceilings to the ground and first floors are suspended, masking the beams and providing mobile supports for display and interchangeable lighting units. The temporary shop is completely free standing inside the new store, external walls having become internal partitions. The spatial effects provided by the links and bridges between old and new provide opportunities for special displays.

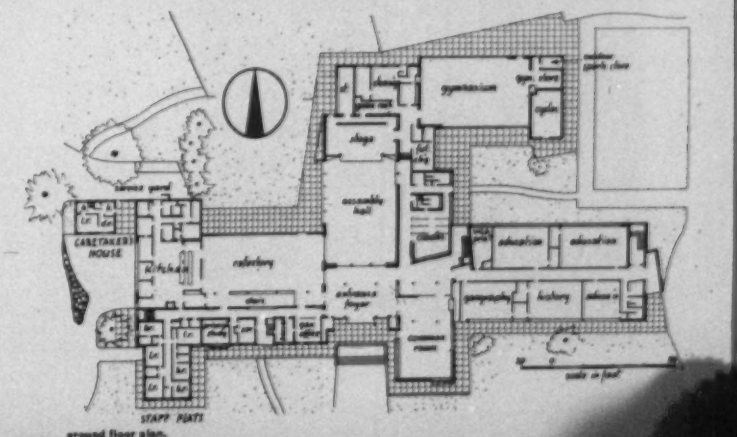
7, *view from second floor level of the junction of old and new buildings.*

8, *looking towards the main entrance, with the library above and the teaching wing to the right.*

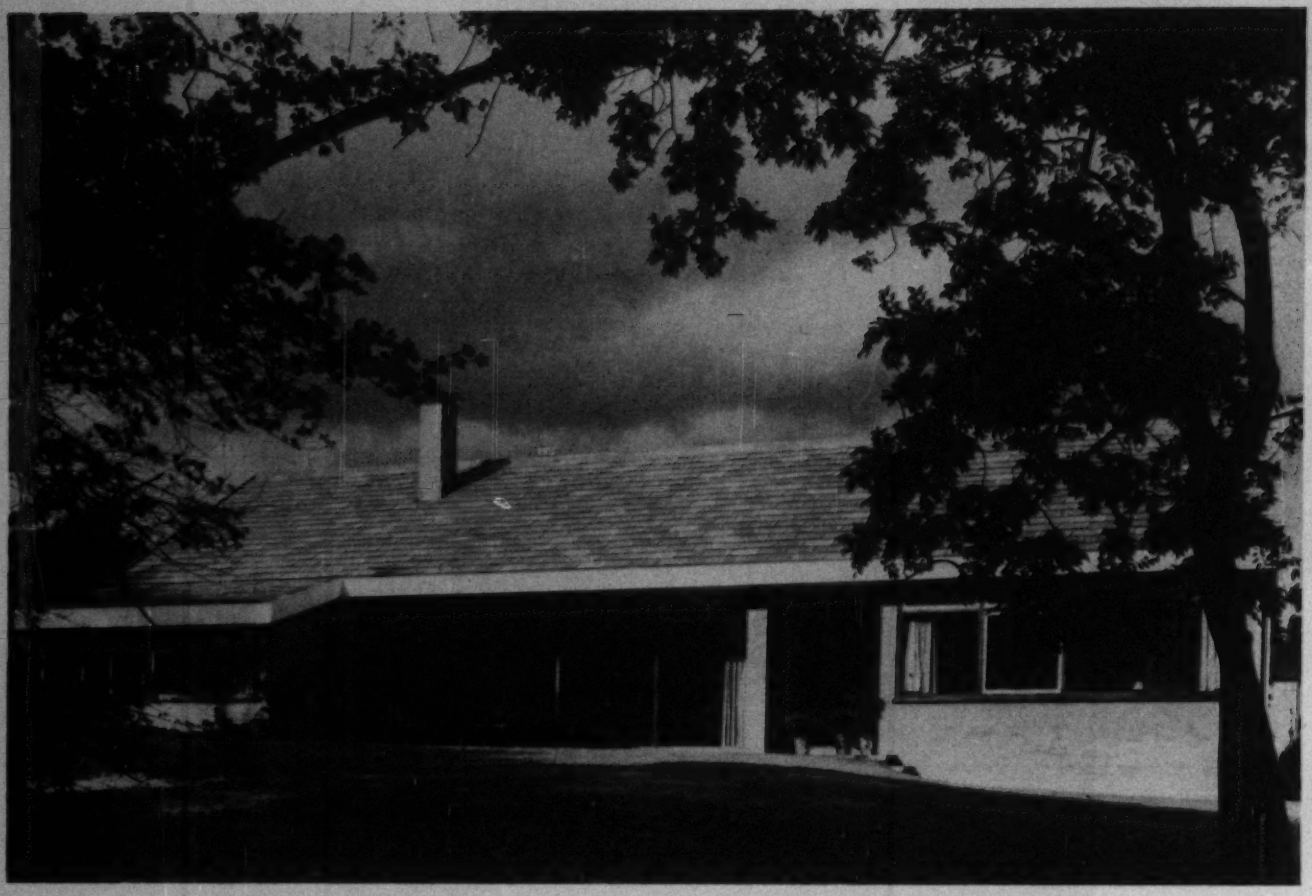
TEACHERS' TRAINING COLLEGE AT BIRMINGHAM

ARCHITECT: A. G. SHEPPARD FIDLER (BIRMINGHAM CITY ARCHITECT)

This training college for 200 students is on a nine-acre site in Westbourne Road, Edgbaston. It consists of a main building for the teaching, social and administrative accommodation and two hostels each housing 65 women students. The main building is of steel frame construction with concrete floors and roofs, and generally the cladding is of brickwork faced with two colours of rustic bricks. A green granite aggregate facing slab to parts of the three-storey block provides a contrast to the brickwork and is used as infill panels between the large windows of the teaching rooms.



ground floor plan.



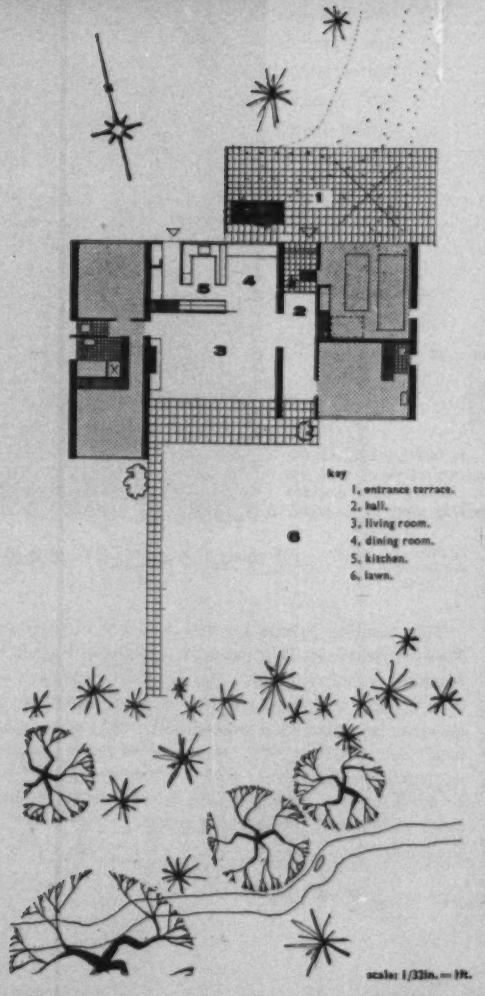
9

HOUSE AT SHEFFIELD

ARCHITECTS: GEOFFREY AND JUNE HOLROYD

The house is in Eccleshall, a suburb of Sheffield on a deep narrow site with a wood and stream at the end. The glazed façade of the house is placed so that trees and foliage entirely fill the view, and a built-up lawn continues the floor and terrace in one horizontal plane towards this. The house consists of four load-bearing brick cross walls at centres of 25 ft., 25 ft. and 15 ft. and a heavy concrete tile roof. To cut out the need for lintels across glazed areas extending fully between crosswalls a continuous timber ceiling is suspended from pre-cast prestressed concrete purlins. All storage walls and window frames are fixed directly to the suspended ceiling. The house is centrally heated by hot-air ducts under floors, part of which can be cut off if not required. The bathroom is electrically heated.

10



9, view of the garden façade from the south.
10, looking from the living room across terrace and built-up lawn to the wood.

The name miscellany implies, of course, an architectural miscellany—one that will include subjects which, though marginal to architecture, are nevertheless vital to it.

miscellany

BOOKS

A RAILWAY RICKMAN

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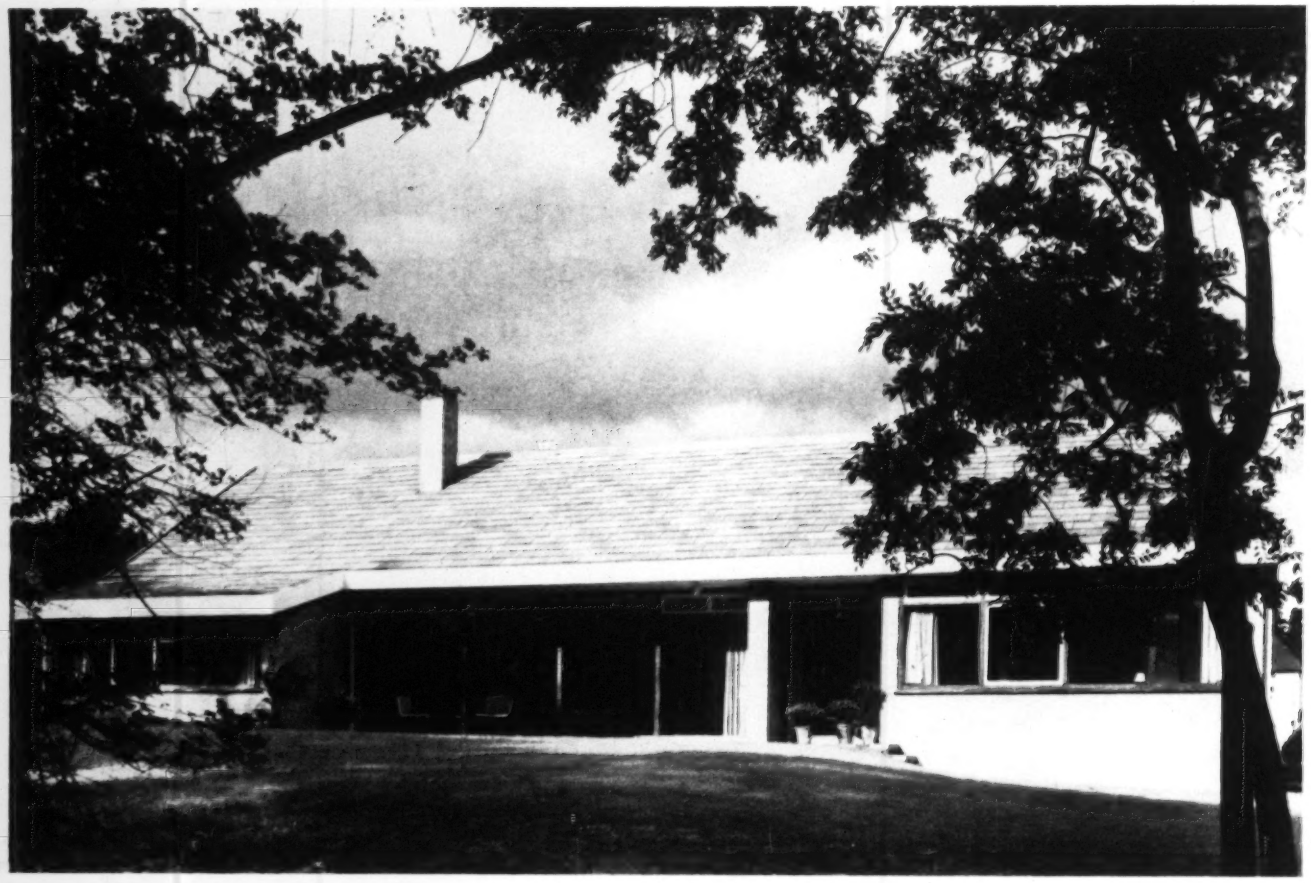

9

HOUSE AT SHEFFIELD

ARCHITECTS: GEOFFREY AND JUNE HOLROYD

The house is in Eccleshall, a suburb of Sheffield on a deep narrow site with a wood and stream at the end. The glazed façade of the house is placed so that trees and foliage entirely fill the view, and a built-up lawn continues the floor and terrace in one horizontal plane towards this. The house consists of four load-bearing brick cross walls at centres of 25 ft., 25 ft. and 15 ft. and a heavy concrete tile roof. To cut out the need for lintels across glazed areas extending fully between crosswalls a continuous timber ceiling is suspended from pre-cast prestressed concrete purlins. All storage walls and window frames are fixed directly to the suspended ceiling. The house is centrally heated by hot-air ducts under floors, part of which can be cut off if not required. The bathroom is electrically heated.

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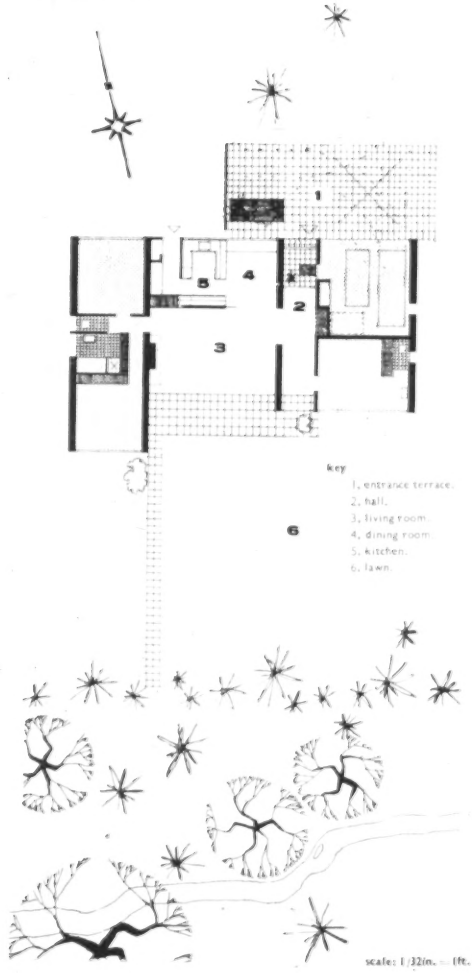
9, view of the garden façade from the south.
10, *looking from the living room across terrace and built-up lawn to the wood.*



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EXHIBITIONS

PAINTINGS

The disconcerting exhibition at the ICA of work by five young painters was arranged in a hurry by Roger Coleman—the youngest member of the ICA's selection committee—to replace an exhibition which had to be postponed. I think Coleman is the only man who could have brought this group of paintings together, for it proved to be a further demonstration of the kind of 'relaxed' intransigence which turned 'Ark' under his editorship into the gayest and most intelligent art magazine published here since the war. The artists were not expecting to be exhibited and the show was an unmitigated exposure of their explorations and longings, their crazy humour, passionate seriousness and startling lack of hero-worship.

They are by way of being connoisseurs of mass media; they gave the popular press every assistance in its search for news angles, and one of them, William Green, who is still a student at the RCA, provided television with some first-class entertainment by exaggerating his 'approach' to the canvas into a gimmick to end all gimmicks. In contrast to the automatic finger-wagging of the critics, who were once again alarmed by the growing irresponsibility of the ICA and were not surprised that the general public remained suspicious of modern art when a supposedly serious organization exhibited paintings done with a bike, the television sequences of Green at work were directed with a subtle appreciation of both the absurdity and validity of his procedures: there was fine visual drama in the shots which followed streams of black paint across large white canvases, and the laughs were allowed to arise naturally out of Green's total concentration upon his task, leaving his shy and melancholy dignity quite unsmirched.

Green and three of the other exhibitors—Richard Smith, Peter Blake and Peter Coviello—are all well under thirty and have grown up in an informal, nonconformist atmosphere created by the impact of American action painting, and unlike that rather shabby battalion of professional picture-makers who have indicated their desire to be in on action painting by trying to mate Rothko with Pollock or Mathieu with Soulages, with the cold-eyed inefficiency of stock breeders who haven't learned the facts of life, these young men are really venturesome. They make sure of nothing beforehand, but if they have ever been visited by the spectre of the Unresolved Problem they must have been fast asleep at the time. The fifth exhibitor, John Barnicoat, is older than the others. He writes with a brush on a compartmented surface, and fights with shadows in a world of aesthetics.

Richard Smith's 'Blue at the Roots' is the most untroubled piece of English action painting I have seen: it makes a new kind of conversation piece, and its three large areas of colour mingle at the edges with such obvious pleasure that one could easily get the notion that it might not be right to be looking. Coviello is absorbed by what might be called the Presence in the Pâté. So far, his pastes haven't anything like the range of textures to be found in the work of the Dutch painter Bogart, who has just had his first London one-man show at Ginpels, but they are well-pounded and edible-looking, and the dim figures that have been buried in them appear to be slowly moving towards the surface in accordance with some natural law.

But the most original of these young painters is Peter Blake. He is so unmistakably and unshakably himself that his pictures do not look like anything else that has ever been called a work of art, and he will probably have to wait much longer than the others for a one-man show. Most of his pictures are painted on bits of scrapped planking, they usually depict circus people in a manner somewhat reminiscent of Victorian posters, and the painted titles are part of the image. The subjects include 'Dixie, Darling of the Midway,' 'Siriol, She Devil of Naked Madness' and 'Cherie, Only Bearded Tattooed Lady.' The painted image is partly scrubbed out, as if to give it the look of an ancient panel, and then bits of the clothing are 'restored' with coloured tin-foil. The clash between paint and tin-foil recreates in a remarkable way the noise, the garish lights and the tawdry finery. I have made them sound like funny little ingenuities, and in a sense that's what they are, but they are also desperately sad, for Blake has perceived his freaks as battered saints, and they stare out at us with unbearable passivity, as if they were representatives of the insulted and condemned, raised to frowsy godhead. Blake scrutinizes the human void as sharply as Samuel Beckett, but with more compassion. His largest picture, 'On the Balcony,' 1, is planned quite differently from the others. It starts as an oblique view of young people on park benches, and then he uses the grass as a notice board on which to paste his most treasured scraps. Everything that gets into this picture takes on the look of being something that he wants to keep forever, from the Royal family and the

1

photograph 'In Sincere Memory of John Minton' to the cover of Life Magazine and the badges on the young people. It doesn't look much of a picture in reproduction, and the picture itself was pitched out of the Littlewoods Competition by an eminent and fairly liberal selection committee; nevertheless, it is a splendid example of Blake's inspired messing about and of his ability to make a direct and loving response to the world about him.

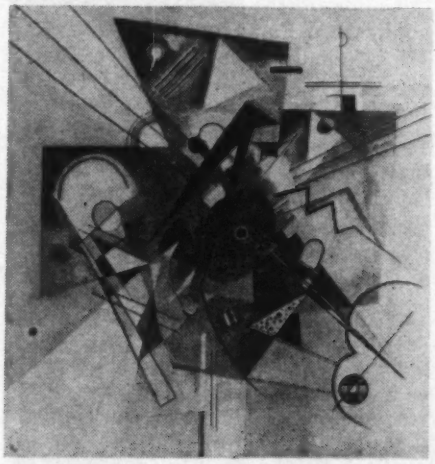
It's madness to admit it, but I would rather have this tatty work of Blake's than any of the geometrical abstracts by Kandinsky included in his exhibition at the Tate. The examples of his abstract expressionism are a different matter.

The Tate show was of forty-five paintings chosen by J. J. Sweeney from the huge Kandinsky collection in the Guggenheim museum. The selection provides a fair account of his career, and it begins to look as if the only Kandinsky's which I can wholeheartedly admire were all painted in

2

1914. This seems to be the year in which the best of his abstract expressionist pictures were painted, for although he was formulating the style in 1913 the pictures of that year are marred for me by the obtrusive presence of long, pod-like, disturbingly ugly forms. He was at his best when he avoided closed forms altogether, and produced a brilliantly explosive flux of paint marks rushing diagonally across the canvas, 2.

I do not understand Kandinsky's subsequent devotion to geometrical fantasy, except that it's obviously fanatical, and the result of some kind of conversion, and that it represents an attempt to separate the spirit from the flesh. His contention that a circle is calmer than an apple and that the impact of the acute angle of a triangle on a circle produces an effect no less powerful than the finger of God touching the finger of Adam in Michelangelo is simply outside my experience. I have chosen for reproduction what I take to be an exceptionally good



3

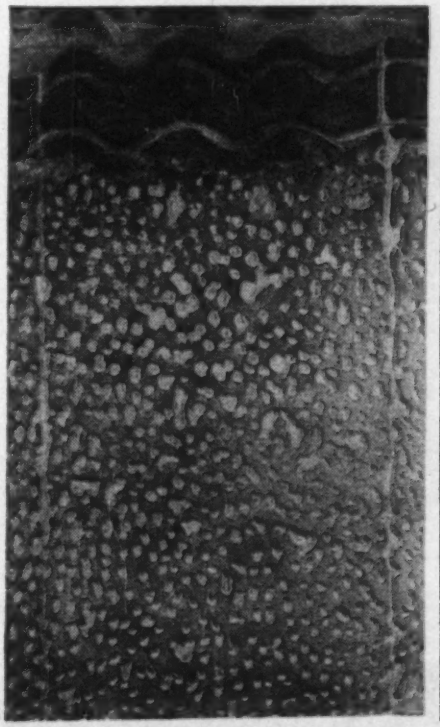
example of his geometrical fantasy, 3, but it leaves me cold. I can see in it only a flair for designing, and an unimaginative centering of the forms which is almost incredible, coming as it does from a painter who was one of the first of the moderns to 'frolic among the focusless fields, tumultuous,' as Masson puts it, 'with incessant creation.' The Kandinsky catalogue was a modest little document which didn't include a biographical note.

Recent attempts to haul up Robert Delaunay into the front rank of twentieth-century painters are reflected in the sumptuousness and documentary thoroughness of the catalogue issued for his retrospective at the Arts Council Gallery. He is credited with being the first painter to do this, that and the other, and his paintings of overlapping discs have been called 'radiant hymns to the sun,' but his work is facile at its best, and ugly and unresolved or vulgarly pretty at its worst. Even the Eiffel Tower paintings have not worn well; they look more confused than

4

dynamic, and the suggestion made in the catalogue that they are finer than Leger's early cubism is ridiculous. His cubo-futuristic 'Cardiff Team,' 4, has a thin charm of its own, and he has incorporated lettering amusingly, to give the uniformed spectator a line on the virtues of his work—its astral beauty, its constructive arrangement of colour and its overall magic.

Antonio Tàpies, whose work was first shown here three or four years ago in an official exhibition of contemporary Spanish art, has recently contributed a group of new works to a mixed exhibition at Tooth's. In the interval he has become one of the most considerable of the artists who



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are experimenting with hard pastes. He digs into his delicately coloured plasters with an exquisite appreciation of the laws of chance, and his 'Grey Painting with Indentations,' 5, is among the most refined and elegant works yet produced under the influence of Dubuffet's 'bits of ground.'

Robert Melville

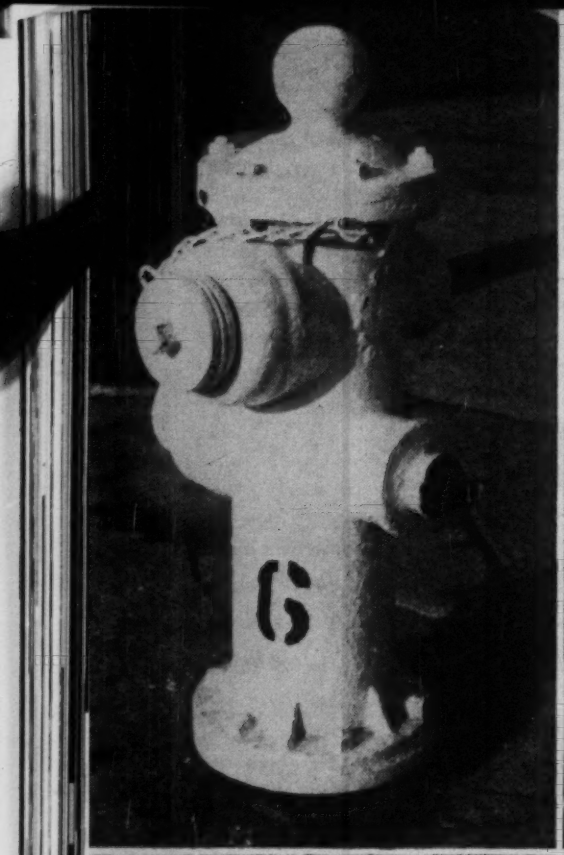
TOWNSCAPE

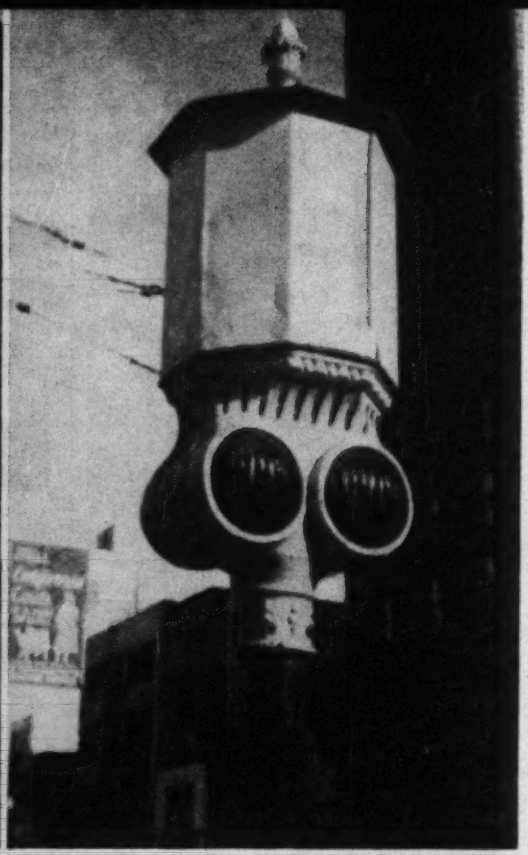
DOWNTOWN AMERICA

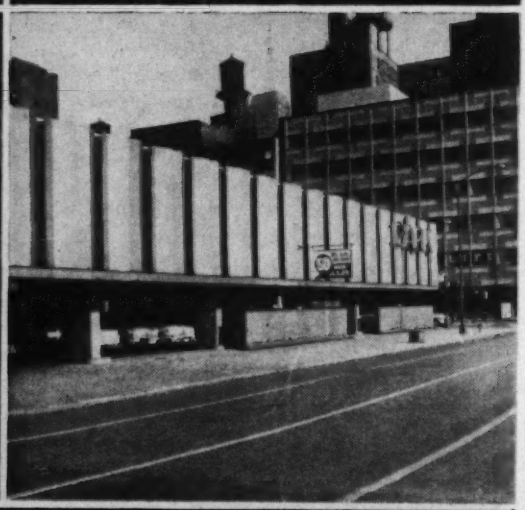
Fortune *magazine has been running a remarkable series of articles on urban growth which is far ahead of current American planning and architectural opinion.* It is intended to be general reading for high level business executives (it need hardly be said that there is no equivalent paper in this country) and has attacked the complementary problems of a throwaway attitude to the American countryside—there is now precious little to throw away between New York and Washington—and sterile and inhuman urban redevelopment projects, some of them done by august names in the Modern Movement. The final article appeared this month, dealing with the things that go towards making a humane environment downtown, and *Fortune* asked the REVIEW's Counter-Attack Bureau to help with this; the issue contains drawings by Gordon Cullen based on research by Ian Nairn.

The problem became one of giving the urban pedestrian an alternative to the automobile-gridiron-skyscraper world, to use if he wished to. American cities are magnificent expressions of the impersonal parts of metropolitan life, from the first sight of towers on the horizon to the staccato non-serial block-by-block progression through deep slits of space. But in the process some of them have stopped being habitable places for people six feet high. In metropolitan London you always have the choice: you can become flotsam in the shopping streets, or an onlooker from the alleys and churchyards and squares. In an American city there is no such choice, and the townscaper's job is to provide one, not by replacing the gridiron but by superimposing another pattern on it, to provide two simultaneous cities, the effect of each being enhanced because it counterpoints the other.

There are in fact more existing clues to this pedestrian pattern than might be expected. A few of them are shown on the next page they range in size from the splendid







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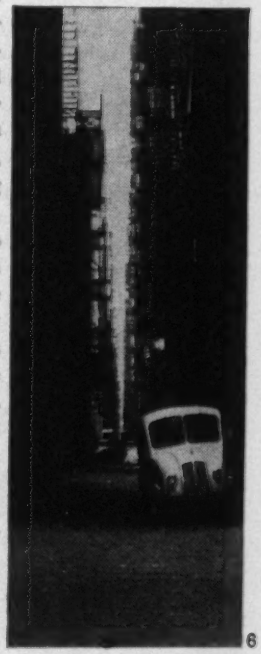
and unexpected virility of the San Francisco fire hydrants, 1, and street lights, 2, to the opportunities given by superblock development, and the mid-block alleys—cavernous in Chicago, 6, man-sized in Louisville, Kentucky (the New York equivalent is public ways through the buildings themselves). Cars can be brought into the pattern topographically, like San Francisco's 1-in-4 streets, 3, or by organizing them into buildings behind quickly erected screen walls, as in Chicago, 4. Where the pedestrian world has already been created the result is remarkable. San Antonio, Texas, has a river running through it, 5, which makes a complete loop in the heart of the city, 15 feet below street level. It was laid out before the war by the W.P.A. as a pedestrian ribbon with cafés and open-air bookstalls, plus the continual impact of the city above, changing every few yards. It is now a magnet for both local residents and tourists: San Antonio has been given the choice. The sad thing is that most redevelopment projects, even the most architecturally up to date, have not got beyond formal buildings in formal landscape—neat (when seen from the top of a skyscraper), clean and stone-dead. I.N.



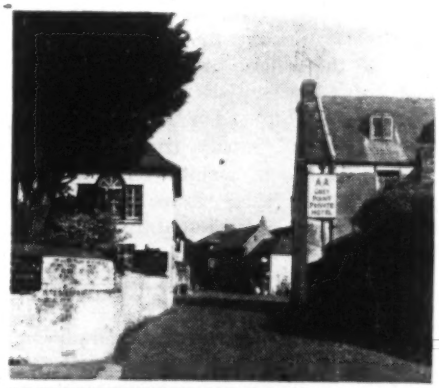
6

COUNTER-ATTACK

57. Portsmouth, Hants. (*City Council*). The blitz left Portsmouth with so few old buildings that one might have expected the Council would have preserved those which remain. Apparently not; the latest official victim is the Mile End colonnade, an early nineteenth century Doric screen to a small and now disused cemetery. The area is being developed as a filling station: the station owners offered the colonnade and land behind it as a gift to the Council as an open space whilst they used the forecourt only. The Council accepted the land but applied to remove the colonnade from the list of scheduled buildings, and the Ministry agreed, regretting the demolition but 'leaving the decision to the local authority'—a choice bit of buck-passing when it was the local authority who had applied to demolish in the first place. The colonnade would make an admirable entry to the park—a screen wall has to be erected anyway between park and petrol pumps—and would be enhanced if anything by a

busy forecourt and bright colours. Not to make use of it like this—against the advice of their own city architect—can only show a complete lack of imagination in the City Council; and Portsmouth could do with some imagination today.

58. SOS Findon, Sussex. (*Area Planning Committee.*) Findon is the first village north of Worthing on the Sussex Downs. It has a very pleasant central square, 1, but is on the verge of being swamped by inadequately controlled new housing. The problem is very simple and can be summed up in two words—flint walls, 2; if the walls are maintained the village will survive. This can be insisted on as a condition of planning consent—as has been done for example at Thorpe near Egham in Surrey: if the result involves mirrors and tricky garage entrances, that is a fair price to



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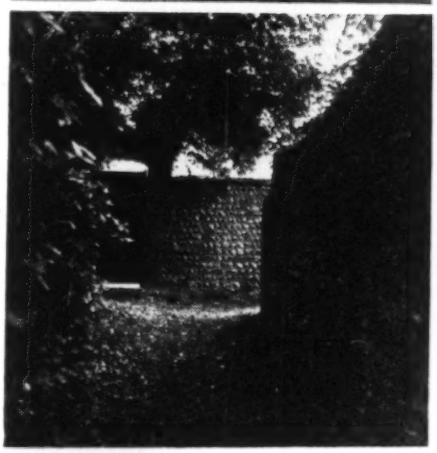

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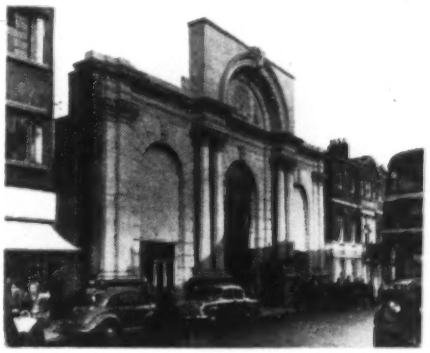
pay for living in an unspoilt village. What is happening at the moment is this, 3, and 4, and the villagers are justifiably fed up. The fate of Findon is entirely in the hands of the area planning officer and the planning committee: they could

4

give a magnificent lead by preparing a supplementary development plan in co-operation with the villagers which would state exactly on what terms new buildings would be allowed into the village (not stylistic terms, but conditions such as those mentioned in the note on Chichester in last month's issue). Findon would be noteworthy as the first village in the country to do this; at the moment it looks like being just one more bit of Swamped Sussex.

59. Pontefract, Yorks, WR. (*Town Council.*) An imaginative match of new and old has kept the façade of Pontefract's market hall, 5, whilst completely rebuilding the back. Built in 1859, it is not yet old enough to be respected as an



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antique, so that its survival is all the more praiseworthy. In fact it has guts and character, in this case more important than antiquity particularly because so much modern building in the Riding is quite characterless.

60. Edgbaston, Birmingham, and Norwich, Norfolk. (*Tube Investments Ltd., and Norwich Union.*) Here are two more buildings which prove that the battle for modern architecture has certainly not yet been won in Great Britain. T.I. House, 6, is on a corner site on the

6

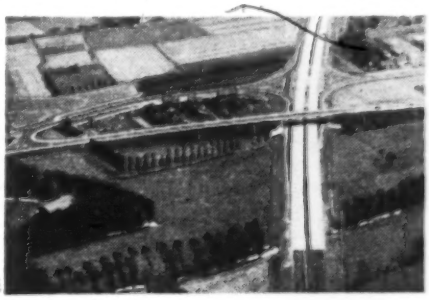
main road at the beginning of Edgbaston and Neo-Georgian has been chosen to 'blend with existing buildings and preserve the architectural character of Edgbaston.' In fact, six storeys will automatically alter the scale of this part of Edgbaston whatever salad dressing is applied to the frame. This is not necessarily a bad thing (the building will be a terminal view to Broad Street and is on the very edge of the leafy early nineteenth-century suburb); the thing to do is to accentuate the contrast by having a crisp and lightly detailed modern block, not an inflated replica of one of the nearby villas. Work has only just started on the foundations; the structural frame could still easily be given a more appropriate set of clothes.

At Norwich the new building is complete, 7, and its jaded tenth-hand Palladianism is a sad

7

decline from the Edwardian magnificence of some of the firm's earlier buildings. It is set back forty feet from the old building line in St. Stephen's Street (which only carries one-way traffic as it is) leaving an enormous barren pavement with no character of its own, certainly not a place to linger in. This is just wideness for wideness' sake without any attempt to do anything positive; and it isn't good enough for a city which has so far given all of its urban open spaces a distinct character and surrounded them by a network of lanes to augment their effect.

61. Ostend-Brussels Motorway, Belgium. A cloverleaf intersection which is a beautiful example of economical land use, 8, and the reverse of the vast Euclidean doodles of current American practice, which leave the land



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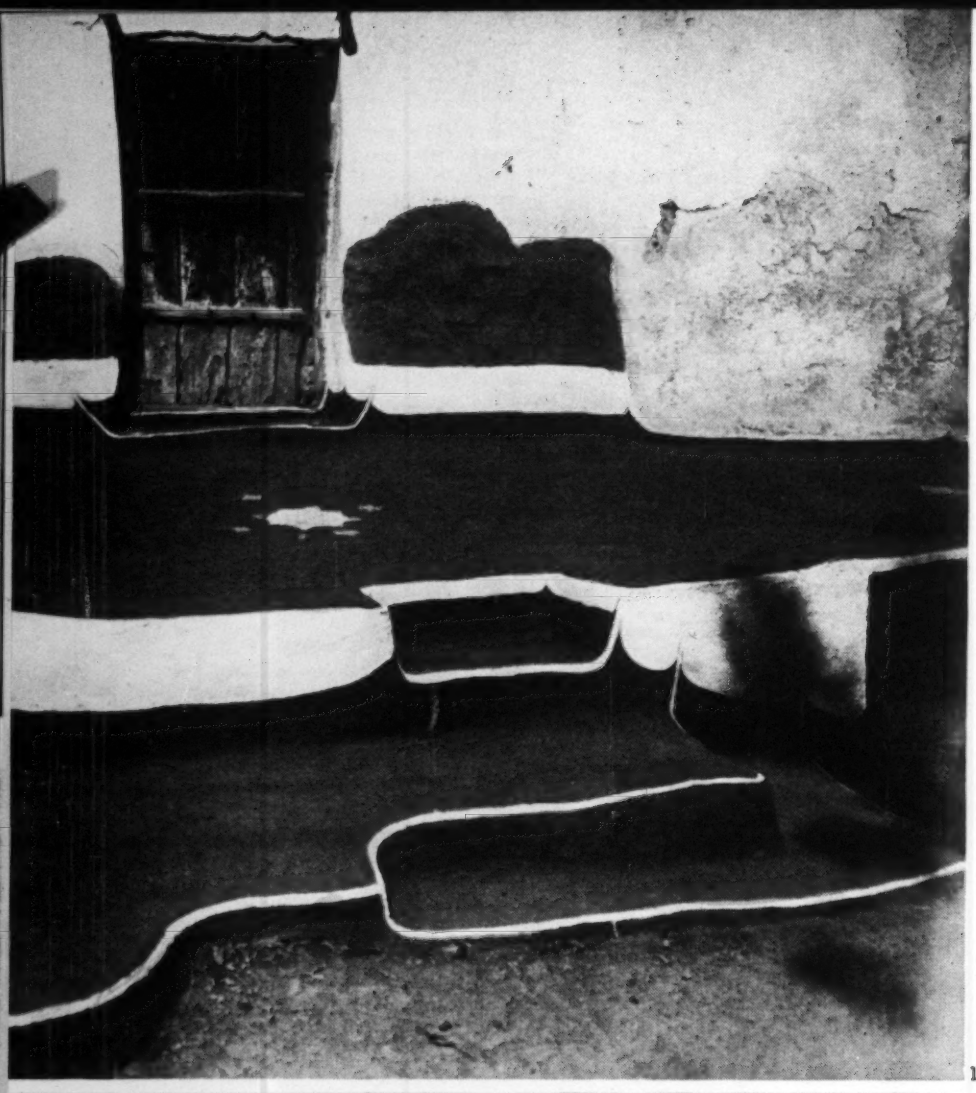
enclosed in the loop quite sterile. There can be no question of which alternative the English motorways ought to adopt: we haven't enough land to be able to spare it for grandiose gestures. The houses in the loop on the left actually fit in better for being islanded and made into a self-contained unit, something which can be seen in the areas cut in two by the Cromwell Road extension and which the REVIEW will discuss when that road is finally complete.



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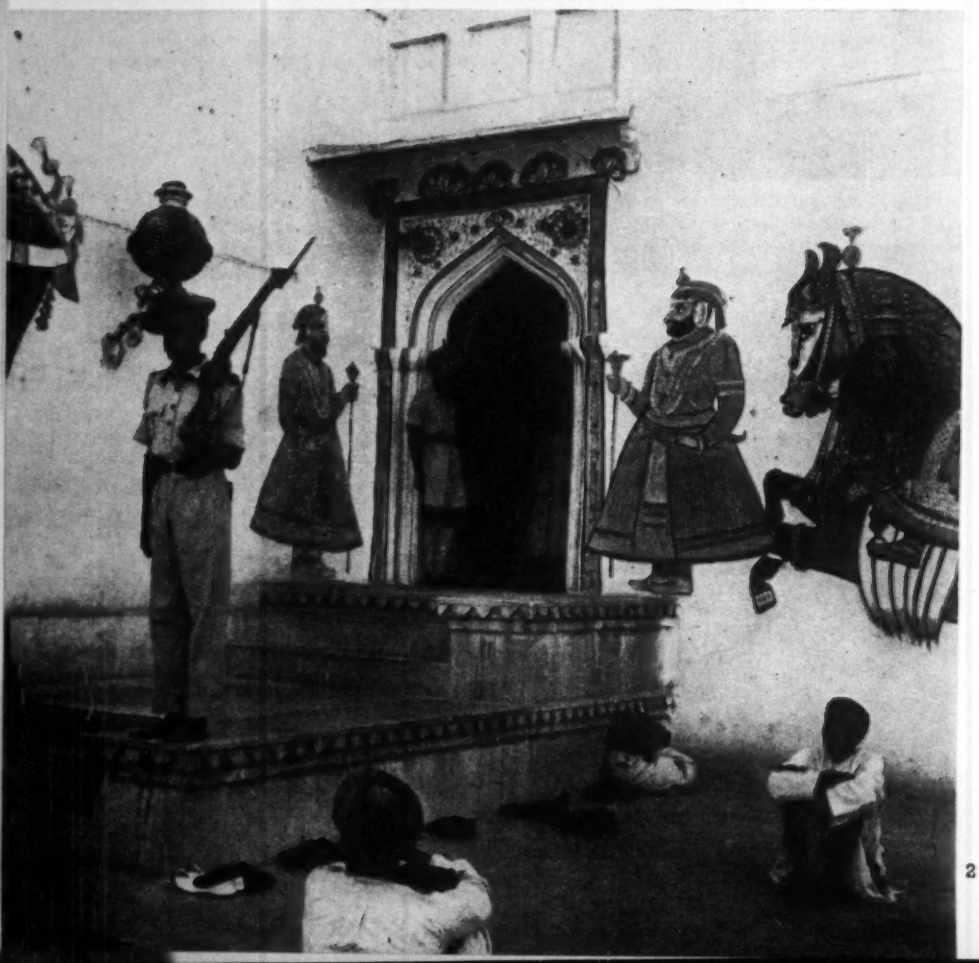

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APPLIED ART

— PAINTED PORTALS

Whitewash is the luxury of rich and poor alike, Le Corbusier once said, but had he then known India, he might have included polychromy in this canon of democratic decoration, for both prince and peasant there can often boast skilful and effective colour-work at their front doors. In Congeevaram, an unpretentious house photographed by Roderick Cameron*, 1, boasted—like many others in the region—a well-maintained flight of steps leading up to the main platform of the house. Steps and platform alike are of beaten earth, the sharp arrises picked out in white in a manner that is both functional and visually trim, while the broader bands of paint echo, by the scallopings of their lower edges, the sensible covings of the re-entrant junctions of horizontal and vertical surfaces, where a sharp edge would have been impracticable in the given material.

If this was Indian Functional Tradition, the palace of the Maharajadhiraja Mharana, head of the premier ruling house of India and entitled to a salute of nineteen guns, at Udaipur, 2, stands at the other extreme in its intentions as a building, and yet the means it employs to express its function are substantially the same. Polychromy is used again, not to define a step and a platform, but the position of the ruler, whose security and status are secured not only by the live, contemporary soldiers standing guard at the entrance, but also by painted representations of traditional guards and military animals, standing in their own, purely pictorial relationship to the whitewashed wall-surface and the painted architecture of the door-case.

Michel Santiago

*SHADOWS FROM INDIA by *Roderick Cameron* is to be published by *Heinemann* in May. An exhibition of Cameron's Indian photographs will be held in London in early June.

1, *above, steps and living platform of a house in Congeevaram.*
2, *below, mural painting around the courtyard of the palace at Udaipur.*

SKILL

HI-FI

by Philip Hickson

It is hardly necessary to explain the growing importance of high-fidelity home-music systems or what they comprise. Most people now have a good idea of what can be expected from a really first-class high-fidelity equipment as compared with the reproduction of records and radio obtainable from the ordinary commercial radiogram. Music lovers realize that to obtain the faithful reproduction of sound, the sense of 'presence,'—of being in the same room as the artiste and the realization of full musical enjoyment—it is necessary to have a 'full-blooded Hi-Fi system. High-fidelity systems, as such, comprise four basic parts: the radio unit; the record player; the amplifier and control unit; and the loudspeaker. The most important link in this chain is undoubtedly the loudspeaker and in this article it is only proposed to deal with one aspect of the loudspeaker and its inclusion as a built-in unit into a house or bungalow.

As is well known, a loudspeaker unit consists of a diaphragm—usually called the cone—which moves the surrounding air molecules and thus transmits the sound vibrations to the ears of the listener. This cone is energized by a coil of wire moving in a magnetic field according to electrical impulses received from the amplifier.

As the final musical results are determined by the amount of and by the way the air is vibrated, it follows that the shape and size of the cabinet or enclosure in which the unit is contained is of the utmost importance. Without going into technical details it is virtually impossible to provide realism with a very small cabinet. All sorts of tricks have been resorted to in order to improve the 'frequency response' (the range of musical notes and overtones reproduced) by fitting loudspeakers into cabinets with folded horns, resonating chambers and so on, but the aim of the designer is to try and provide something that will give the effect of the technically necessary large volume of air into a small space for convenience. In other words, trying to put a quart into a pint pot.

However, no cabinet design tricks or resonators can equal the reproduction afforded by an exponential horn of correct dimensions to reproduce properly the lowest musical notes. The sense of 'presence' and spaciousness is not really believable until heard when a column of air of the proper dimensions is being vibrated. One loses entirely that sense of the sound of a seventy-piece orchestra coming through a twelve-inch diameter hole. But, and this is a big but, a horn of this type needs a lot of room!

This, however, is the challenge to the architect; to be able to accommodate a horn of the dimensions needed and yet to make it a 'functional feature' of the house or to build it in in such a way that it forms part of the structure. Sir Hugh Casson recently accommodated a horn of very large dimensions as an architectural feature on the side of a bungalow for Lord Montagu at Beaulieu. Although so large and of entirely functional design, its contours nevertheless flow effortlessly into the lines of the building. The results it gives are quite exceptional. To get some idea of the size of horn required, table I gives the mouth diameter required for the lowest musical frequency it is desired to reproduce adequately, the length depends somewhat on the size of the loudspeaker unit to be used but in the second table lengths are given for speaker units of 12-in. and 15-in. diameters.

The large horn and speaker unit are, of course, primarily for the very low and medium low notes; the middle range, the treble and overtones are dealt with by other smaller speaker units which are fitted in the mouth of the large horn. The bass notes give depth, character and timbre to the music, while the treble notes and overtones give the quality, colour and subtle nuances of tone and

table I

lowest frequency	musical note	diameter of horn mouth	rate of taper*
16 cycles per sec.	C_4 below middle C	21 ft.	48 in.
24 " " "	G	15 ft. 9 in.	36 in.
32 " " "	C_3 below middle C	10 ft. 6 in.	24 in.
48 " " "	G	7 ft. 10 in.	18 in.
64 " " "	C_2 below middle C	5 ft. 3 in.	12 in.

* This is the spacing between the ordinates of the horn at which the area doubles each time.

table II

lowest frequency	length of horn using 12 in. unit (approx.)	length of horn using 15 in. unit (approx.)
16 cycles per sec.	35 ft.	32 ft. 6 in.
24 " " "	23 ft.	21 ft.
32 " " "	15 ft.	13 ft. 6 in.
48 " " "	9 ft.	8 ft.
64 " " "	5 ft.	4 ft. 3 in.

shade. To provide true low bass notes, one needs a lot of air movement and only a horn loading of adequate size can really provide this effectively.

From the table, it will be seen that the horn size required to reproduce effectively 16 cycles per second (the lowest organ pedal note) is so large as to be unwieldy except for a very big room of a very large mansion. However, the 32-cycle and 48-cycle horns can be accommodated in a number of ways in houses and rooms of fairly reasonable size.

It must be emphasized that although the various sizes of horns are 'labelled' by their lowest frequency, this *by no means* infers that the horn will not reproduce frequencies below this. What it means is that the horn will reproduce down to this frequency *without loss* of efficiency, the falling off after this is only gradual; for instance the 48-cycle horn will reproduce 16-cycle organ pedal notes very well indeed and considerably better and more naturally than any of the wood cabinets on the market. I mention this point especially as in case any high-fidelity enthusiast might be reading this article he might be tempted to think that the 'Lowest Frequency' headings to the columns in tables I and II were actually the lowest note the horn could reproduce.

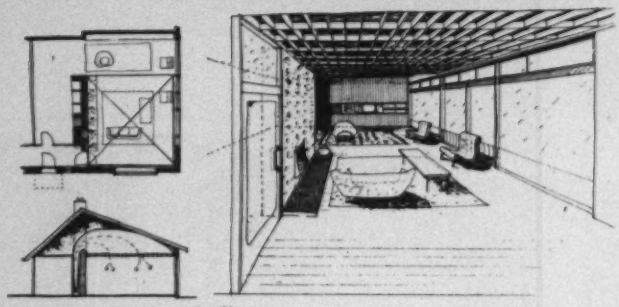
With regard to the loudspeaker used to drive the horn, obviously a high-efficiency unit of at least 12 in. in diameter for the smaller size horns (48 and 64 cycles) and 12 in. or 15 in. for the 32 and 24 cycle horns must be used. Even 18-in. units can be successfully fitted to the larger sizes, thereby shortening the length of the horn somewhat.

The actual cross-sectional shape of the horn, while desirable, is not essential that it should be circular; it can be octagonal, square, or even oblong within limits. The actual shape of the cross-section is not vital so long as the exponential law of the development is followed. However, there are technical reasons why it should not be long and narrow, particularly at the final opening. The horn itself can be straight or curved providing there are not too many convolutions. It must be made of a non-resonant material such as gypsum or plaster 3 in. or so in thickness. If made of wood, this must be fairly thick and the outside must be deadened by plastering over thickly.

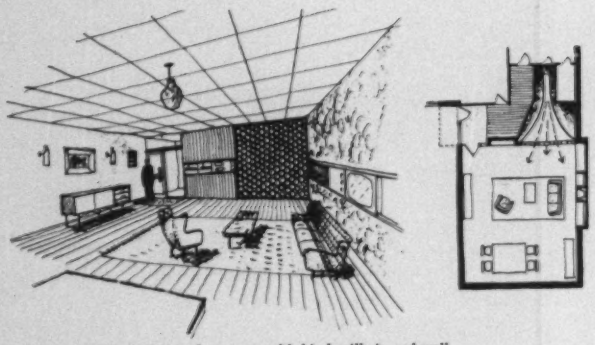
The mouth of the horn (i.e. the final opening from which the sound emanates) can 'feed' the room from a side wall—or from the ceiling—and the sketches show several arrangements of folded horns as well as straight horns 'feeding' in from the roof and an outside wall. In this case the horn can be made an exterior feature and it must be, of course, protected against the weather.

At the loudspeaker-unit end of the horn, arrangements must be made to house the unit and to fix it to the horn by means of bolts or screws. If the horn is a plaster one, these bolts can be embedded in the plaster at time of 'casting' or forming it. It is advisable to fill the compartment where the loudspeaker-unit is fitted with a sound-absorbent material such as Fibreglass after the unit is in place and before the back-plate of the compartment is attached. It is also desirable that this back-plate should have a few 1-in. diameter holes in it to provide the necessary pressure-relief for the movement of the cone.

If there are any problems, specific or general, that may occur to interested readers, I shall be glad to reply if they will write c/o the Editor.

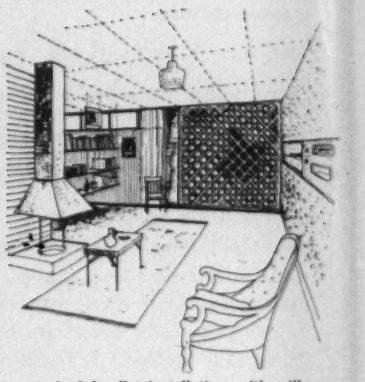


1, *horn in roof above louvred ceiling.*

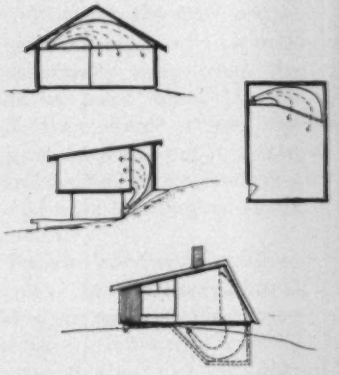


3, *another wall installation, horn recessed behind grille in end wall.*

4, *a hi-fi pagoda.*



2, *bachelor flat installation; with grille over horn mouth.*



5, *typical arrangements of a folded horn.*

Illustrations by D. MILLS, ARIBA

COST ANALYSIS AND COST PLANNING *by John Carter*

'Cost analysis' and the other side of the penny, 'cost planning,' are primarily practical techniques which aim at enabling the architect to control the cost of a design. Their increasing acceptance, among both architects and quantity surveyors, is in itself a most significant cultural event, introducing, as it does, what is almost a new mode of thinking into the design process. In the article below, John Carter, the Architects' Journal's *editor in this subject, explains exactly what these techniques are and how to use them.*

Cost Planning

One of the main uses of analyses is to compare the prices of one building with those of another, but first the prices must be brought to a common basis, because buildings differ in size and total cost. And the prices must also be related in some way to what the customer is getting for his money, because amounts of cash are, by themselves, meaningless. The common basis of the customer's goods is the square foot of floor area, so that £25 worth of ironmongery in a 2,000 sq. ft. house appears as 3d. per sq. ft. of floor area. A list of all such prices affords a sensitive picture of the way in which the money spent has been distributed—indeed, they can be plotted in graphic form, (see table p. 285), like an engineer's stress diagram, portraying what Grenfell Baines has called a 'cost stress pattern' of the building.

Before the advent of cost analysis we thought about costs as something detached from architectural thought. The figures we used represented either *space* (3s. 8d. per ft. cube for chapels, 5s. 6d. for cinemas, 4s. 9d. for fire stations and so on) or they represented *materials* (32s. 9d. per yard super for reduced fletton brickwork in cement lime mortar, 59s. 6d. per yard cube for mass concrete in foundations, 18s. 2d. per foot cube for timber framed in floor joists and so on).

But cost analysis presents prices with quite a new meaning, for it shows the cost not of space or materials, but of architectural notions, of architectural functions. Where it was characteristic of the old idea of costs that you had to design your building in some detail before you knew its cost; cost analysis enables a target cost to be set in advance and the distribution of that target cost to be controlled. Thus where formerly the architect defined only the functional and performance standards his design would have to meet, he can now also define the *cost* standards of these functions. A figure of shillings and pence becomes an index of attainment, interdependent with other indices of attainment (sound insulation, weight bearing capabilities, illumination levels), integral with the complex of knowledge and ideas that a building signifies.

Mechanics of Analysis

There are one or two explanations to be made about the meaning of cost analysis figures, but to complete the picture sketched above, we should

[continued on page 285

continued from page 284]

describe the procedure of planning the cost of a projected building.

Assume that the building owner has given both his space requirements and the amount of money he is prepared to spend. Assume also that you the architect have available the analyses of one or two similar projects which, if not your own buildings, are well known to you. By consultation with your quantity surveyor and other sources of advice, you have decided that 80s. per sq. ft. is a likely total. You deduct a 'safety margin' of, say, 2s., in case there are adverse 'market conditions' when it comes to tendering. Then you deduct something for the normal Contingencies and Preliminaries items. The sum you have left must now be split into separate elements each representing a functional aspect of the design. This can be done at quite an early stage in the working out of the sketch design—the stage when the main lines of the plan and the relationship of the units are becoming fairly clear and you can get a rough idea of the areas of walling and flooring. Let us in fact take *external walling*. In the analysis you are using to build up the cost plan, walling cost 8s., its area was 0.75 of the floor area and its construction was a bit more extravagant than what you have in mind for your new building. First you do some arithmetic to show that the walling cost 10s. 8d. per sq. ft. of *wall* and then, because you are going to try a more economical method of walling, you deduct from this, say, 6d., leaving a target cost of 10s. 2d. per sq. ft. of wall. This is then multiplied by the *wall* area in the sketch design and the product divided by the floor area so that it can be related to all the other element costs you are going to work out.

Procedure for all the elements is more or less the same as this—an arithmetical adjustment for differences in *quantity* of element between the analysis you are using and the sketch design; and an adjustment for differences in *quality* which will be based partly on experience and partly on arithmetic. It used to be quite common when explaining cost planning to people for the first time, for them to be scornfully critical when they realized that the procedure still required judgment and experience—as if the whole point about new methods was to omit the possibility of human error altogether. They quite forgot that, before cost planning was invented, one might involve one's client in two-thirds of his professional fees before he could be given any assurance of the cost at all, and that the architect, in hesitating between this or that system of floor construction, had no means of knowing what effect his choice would have upon the total commitment except that *this* might push it up a bit more than *that*.

Having worked out target costs for every element, they must be totalled up to see how they relate to the total cost—80s. per sq. ft. If they exceed, adjustments will be needed. If the excess is a large one it may mean that the floor area assumed just cannot be bought for the sum of money allowed and either the one must be reduced or the other increased. Discussion of this question with the client can be based on the figures calculated. If the excess is moderate, it is only necessary to prune some of the element cost targets—which ones depending on the knowledge of requirements, methods of construction and prices.

The result of all this work will be the draft cost plan—a list of prices against element headings. It comes into use when the sketch design is becoming more realistic, when actual systems of construction are being considered. For example, the type of external walling proposed will be priced by the quantity surveyor—to see whether it can be done for the sum of money allowed (cost per sq. ft. of floor area by floor area). Sub-contractor's estimates for the heating installation will be compared with the heating target; similarly with roofing estimates, sanitary fittings quotations and structural consultants estimates for the frame. As this work proceeds it may become clear that some of the target costs are too low and others perhaps too high, so periodically there should be an overall cost check leading to a revised cost plan. A system in which the targets are adjusted according to the skill discovered in hitting them may seem un-English, but the point about it is that adjustments are interdependent within a fixed total. If we add to the cost of the windows, the same amount must be taken off somewhere else. Similarly, if it is found that cold water services can be provided for £500 less than was anticipated, we can spend the extra money on, say, ironmongery. It is, perhaps, the most valuable feature of all in cost planning that it gives control over the distribution of money throughout the design phase—and in a remarkably precise way. It is not a method of depressing costs to their lowest.

Sooner or later a point will come when the construction of the building has been worked out for all parts—with only a few points of detail remaining to be settled. For each of the 30 or so 'elements' of the building there will be an estimated cost—based in some cases on the quantity surveyor's calculations, in others on sub-contractors' and suppliers' quotations. They may differ from the original cost plan—perhaps considerably, but the main value of cost planning has not been lost because the prices have been arrived at by adjustment relative to each other, within a known total, and thus expenditure is still under *control*.

The procedure described above is to some extent an ideal one. In practice there are some untidy patches, mainly due to the fact that the technique is still very new. For example, in one private office it was decided to cost plan a building for which no appropriate analysis was available—at least no analysis of which the architect had sufficiently detailed knowledge to use with confidence. What he did was to take six published analyses of similar jobs and average each of their element prices. He was well aware of the fallacy of this method, but it did provide a starting point from which to get at 'real' element targets. As ideas on constructional method and material became clear in the design phase, estimates of their cost enabled the 'average' targets to be corrected. Only the main items of expenditure were targeted but this partial cost planning proved itself at the tender stage. The same office has now cost planned more than half a dozen projects, each one with more assurance than the last. The numerous unit prices produced by approximate estimating in this period have been filed in a 'cost bible' which is used both for calculating target prices and for preparing further estimates.

Presentation of Analyses

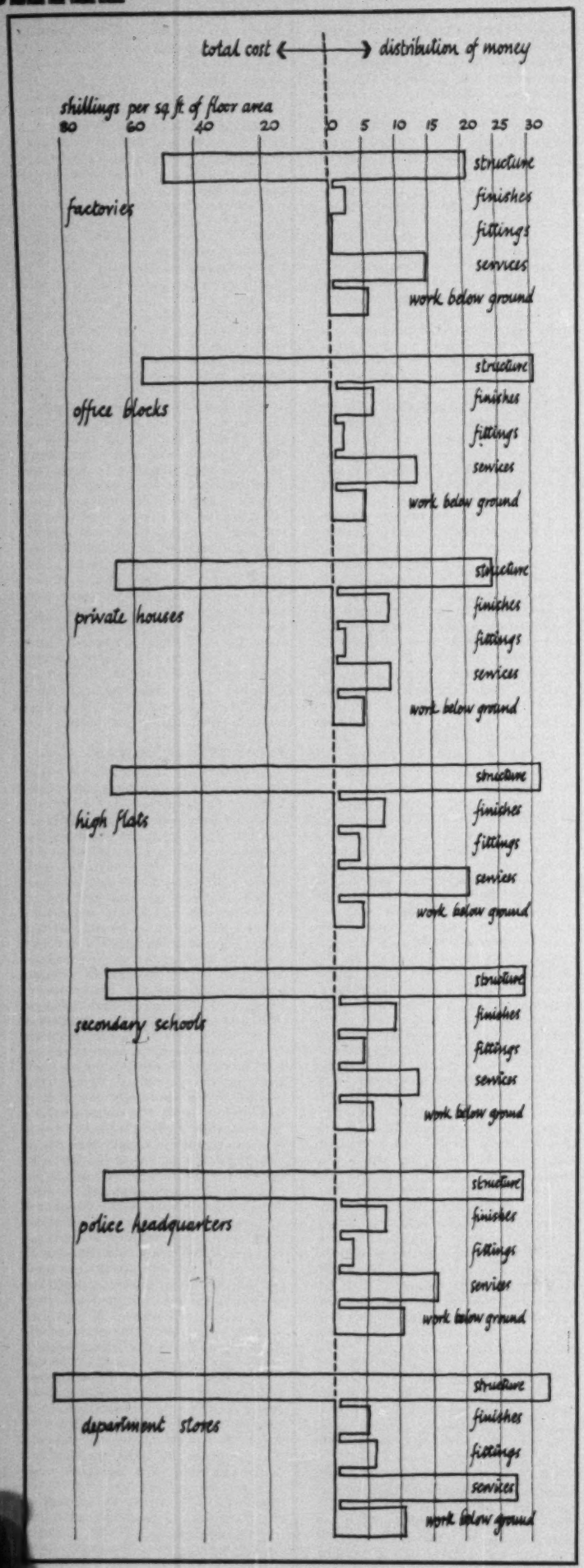
Analyses are normally prepared from trade bills of quantities that have been priced by a builder by collecting the various priced items in the bill under element headings on an abstract sheet. Complications do, of course, occur. In a block of flats where walls and floors are of reinforced concrete constructed by a specialist sub-contractor, separation of the cost into the elements *external walls*, *internal walls*, *upper floors* and *staircases* could prove very laborious. Similarly, with systems of curtain walling with opening lights incorporated, isolation of the element Windows might not be easy. Problems of definition also arise. Should brick and concrete heating main ducts go with *heating installation* or with *work below ground floor level*? Should the cost of closing the cavity of a wall at windows go with the element *Windows* or with *Walls*? Problems of this kind are mainly of significance where two or more analyses are to be compared. Consistency of treatment is, perhaps, of more importance than the actual solution of the problems.

Except in individual offices, there exist so far no detailed definitions of what items each element should include, but a study group convened by the AJ is at present preparing such a guide—for published analyses.

To record and present an analysis so that it is intelligible and useful, three kinds of information are needed—the Quantity, the Quality and the Cost of each element. *Quantity* can be given as sq. ft. of partition or floor finish; numbers of different kinds of electrical outlet, numbers of different kinds of sanitary fitting, etc. *Quality* can be given by brief specification notes describing the materials used and *cost* by shillings per sq. ft. of floor area. To complete the picture of the economics of that particular job, the circumstances of the contract should be given also. The tender date

specimen cost analysis *part of a cost analysis from the* Architects' Journal. *(Old People's Home at Plymouth, city architect: H. J. W. Stirling.)*

element	cost per sq. ft. s.	d.	specification
hot and cold water installation .	3	4	hot and cold to each bed/sitting room basin. Roof space utilized as circulating duct. Hot water circulation assisted by pumps
sanitary fittings . . .	1	4¾	A lavatory basin to each bed/sitting room. Slop hopper to dirty linen room 33 lavatory basins, 6 single sinks, 2 double sinks, 4 foot baths, 5 baths, 9 w.c. suites, 1 slop hopper, 3 urinals
heating and ventilation . .	3	2¾	accelerated low pressure hot water by radiators in all rooms except entrance hall, dining room and ground floor sitting room, where there is coiled floor heating. Open fireplaces in sitting rooms. Extract fans to kitchen and drying room. Natural ventilation to bed/sitting rooms
gas installation . . .		1	gas points to cooker, hot cupboard to servery counter and eye level grill. Poker points to two sitting rooms
electrical installation . .	1	11¼	Each bed/sitting room has light switch and bell push to call system by bedside, with socket outlet below, 18 in. from floor level. Call system of luminous type and once started will not stop until switched off at the source of the call type of point and number of each type: Lighting, 110; 13-amp. outlets, 52; clock, 5; motors, 4; cooker, 1; fire alarms, 6; call system, 31
fire-fighting equipment . .		¼	Four hosereels fixed into positions recommended by the fire officer, two on each floor. Additional equipment for boiler room and kitchen
total of services	10	3¾	
drainage	2	1	one-pipe plumbing
other elements not shown above		3	kitchen equipment, gas: cooker, hot cupboard to servery counter and eye-level grill. Electric refrigerator and cooker to matron's kitchenette
total cost per sq. ft. of floor area = £31,282 / 12,579 sq. ft.	=49	8¼	



cost distribution *of 7 types of building compiled from cost analyses published in the* Architects' Journal. *Left of centreline is the total cost and right its distribution in 5 major groups. Notice that, except for buildings with basements, work below ground remains remarkably constant; that, structure apart, the largest proportion of cost is taken by services (mainly sub-contracted items) and that fitting takes the smallest part of the cost. It is revealing to compare this distribution of expenditure with the distribution of the architect's interest and effort.*

the duration of the contract, whether labour had to be imported, whether the market conditions were adverse and so on. There should also be plans and a photograph.

For presentation of the prices some think it better to give not only the shillings per sq. ft. of floor area, but the cost of the element in £'s and the rate per sq. ft. or per number of the element itself as well. The main purpose here is to provide information for approximate estimating. There is also a wish, particularly among architects, to see the element costs as percentages of the total, but this can be misleading. The cost of the plumbing installation may be the same for two houses of different total cost, but one would appear as a smaller percentage than the other.

There is some conflict of opinion among surveyors and architects on what prices should be presented and how they should be presented. There is an obvious advantage in using final account figures rather than tender prices, since most contracts are subject to variation. But final accounts take notoriously long to settle, after completion, and incorporation of variations into the analysis may add to the labour of preparation.

The objection has been made that to base a cost plan on an analysis which itself represents perhaps the lowest of six tenders is not very realistic, especially if the tenderer put all his profit in the preliminaries and 'loaded' the rates for excavations and foundations—in order to get a fat first certificate. Clearly, analyses would be much better if bills were always priced in the same way and if final account prices were used, but to delay the introduction of analyses into the profession until these conditions can be fulfilled would mean remaining too long in the dark. In any case it can be held that a builders' tender represents a firm offer to do certain work for a certain sum and is, therefore, not a fictitious figure. Nor is there any reason why quantity surveyors cannot use the same experience and knowledge in interpreting bill rates that they used before cost analysis came on the scene.

So far we have described what cost analyses are; how they can be used to plan the cost of a project in advance and how they are prepared. What else do they tell us?

Cost Distribution

Apart from those in MOE Bulletin 4 (Cost Study) which was seen by a relatively small number of the profession, the first analysis to be published appeared in February, 1955, in the *Architects' Journal*. Since then about 100 analyses have appeared representing some 15 different types of building. We are by now so used to them that we forget what it was like not to know how money was distributed in buildings. The actual figures challenge many of those assumptions which lie at the root of architectural theory and make a revealing commentary on accepted procedure.

All architects are familiar with the post tender reduction bill—that 'morning after the night before' when the bold decisions of the design phase have to be revised to clip away the excess thousands of pounds.

A fine floor finish may give way to cheap tiles, hardwood joinery to softwood, 3 coats of oil paint to 2 coats of distemper, Swedish ironmongery to British BMA. Yet cost analyses reveal these items to be quite small proportions of the total price. Floor finishes may take 2s. 6d. out of 70s. whereas the roof cost in the same building is perhaps 6s. 6d. Quite a small reduction of the roof cost could lower the tender by more than a drastic reduction of the floor finish cost, and with a less adverse effect on the future maintenance costs of the building. But at post tender stage it is too late to reconsider the roof. The advent of cost analysis shows how very much in the dark we were in the past, designing this or that part of a building without knowing what it would cost, without knowing what it *ought* to cost, without knowing what proportion of the total money its function and purpose should justify.

When published analyses first began to appear, one of the surprises was the large proportion taken by services—heating, electrical and plumbing work. In some building types these together often cost as much or even more than the structural frame, even though the frame appears to be the biggest design problem and the most difficult construction task on site. Why is this so—or rather why are we surprised that it is so? It could be that the great emphasis laid upon economical structure and architect-engineer collaboration in the 1930's has caused services engineering to be left behind in the general progress towards economy. It could be that because services—pipes and cables—have no 'form' in the architectural sense and are mostly buried away from sight, architects are not interested in them aesthetically and therefore have not lavished their skill or encouraged their engineers to improve design economy. Has the curiously high relative cost of services anything to do with the fact that there are fewer independent consultants in this field than in the structural field?—or with the fact that applied physics and chemistry have little part in architectural training? Has it anything to do with

[continued on page 287

continued from page 286]

element	cost per sq. ft. s. d.	specification
internal partitions . . .	2 9.4	6 in. honeycomb gypsum plaster panels self finished both faces fibrous plaster column casings hardwood sliding folding doors
6 in. plaster panels — 323 sq. yds.		
sliding folding doors — 23 sq. yds.		
doors (internal) . . .	0 10.2	2 in. glazed hardwood flush doors pressed metal frames anodized aluminium door furniture.
single — 11		
double — 3		
w.c. doors and partitions . .	0 1.1	1¼ in. softwood flush doors 1¼ in. by 4½ in. softwood frames ironmongery 3 in. honeycomb gypsum plaster panels self finished both faces
no. of cubicles — 2		
wall finishes	0 6.4	86 yds. sup. wall tiling behind 12 sanitary fittings
floor finishes	3 11.9	screeds: 1¾ in. cement and sand finishes: 170 yds. sup. p.v.c. sheet 475 yds. sup. studded rubber 27 yds. sup. cement and sand paving 21 yds. sup. heather brown quarry tiles 5 yds. sup. paving slabs fibre link mat and steel mat well frame tile and hardwood skirting
ceiling finishes	3 6.1	1½ in. suspended vermiculite 3 ft. 4 in. by 1 ft. 8 in. panel ceiling ¼ in. pressed steel painted ceiling closures
decorations	1 10.9	walls (plaster face) — 3 oils steel windows and external doors } ditto ceilings { no decoration hardwood, internal doors and fittings { two coats plastic polish softwood — 3 oils
cloakroom fittings . . .	0 1.2	No. 140 hat and coat hooks on softwood rails

quantity, quality and cost *on the left, a page from (Ministry of Education) Building Bulletin no. 4 (2nd edition) showing a way of presenting cost analyses to express* quantity, quality *and cost of each element. Published by permission of the Controller, HMSO.*

the practice of not measuring 'services' items in the bill of quantities in the same detail as we measure structural work?

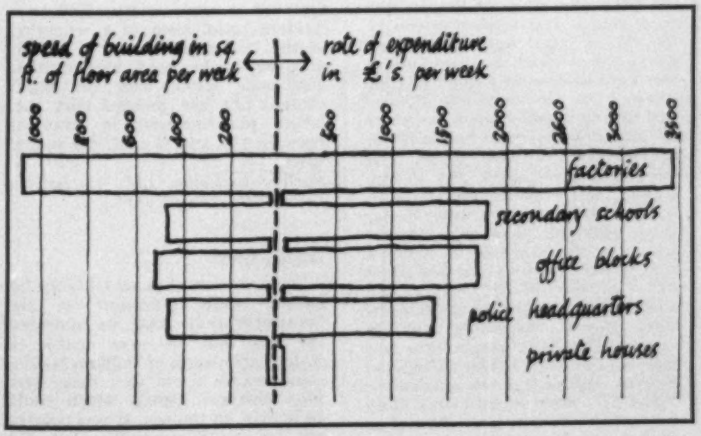
Whatever the answers to these questions, it is fairly clear from cost analyses that we should investigate the whole question of services more closely and critically than we do, to elucidate some of the factors which determine the economy of heating and lighting our buildings, of providing the means to wash, cook, dispose of waste and to relieve ourselves.

Cost Planning in Practice

The technique was first used by the MOE Architects and Building Branch in 1951 on their development school at Wokingham. County authorities were encouraged to adopt the method by the issue of Building Bulletin 4 (Cost Study) in 1951, but few of them did so until rather later on. 1956 saw the beginning of an increasing interest in the method among architects and surveyors generally—a few of them in private offices. The original hostility which greets any proposal to depart from familiar procedure has now died away and there is general agreement that 'some form of cost control' is necessary. But agreement far exceeds practice and the reason given by individual people is for the most part that 'they just haven't the time.' There are two points to be made about this. One is that anything new will take longer while it is new. The second is that those offices which employ cost planning find that it has a disciplining effect on the whole design process. A reduction of the time spent on adjusting high tenders would be expected, since that is one of the objects of the technique, but cost planning also has the effect of forcing earlier consideration of problems that might otherwise be left until later and it compels a more detailed and comprehensive investigation of construction methods. This comes about because all items comprising the total cost must be considered if the total is to be assured and because the quantity surveyor must have a fairly good specification on which to estimate or get quotations for alternative methods.

Indeed, offices which employ cost planning consistently soon realize that the context in which the work takes place must itself be planned in advance if full value is to be realized. The functional breakdown of a job which the cost analysis headings provide forms an appropriate division of tasks for the designers and it seems only a logical step from this that the time to be spent on each task should be planned in advance so that, for example, decisions about the kind of frame will be in step with decisions about the kind of walling or windows. Planning of this kind inevitably brings up questions of the kind of drawings and the way they should be done. If decisions about the kind and cost of one element must depend upon decisions about other elements then it is natural that working drawings remain in draft form until virtually the whole building has been thought out on paper. There arises then a sharper distinction between working drawings, in the literal sense, and the drawings made for issue to the builder (or 'production' drawings). And this distinction makes us wonder whether the kind of drawings we customarily issue are really the best way of putting our ideas across. It was this that led to the idea of 'operational' drawings—a set of standard size sheets, each one of which represents the work of a distinct site operation—showing only the information necessary for that operation. Now there is a close correspondence between 'elements' and 'operations' so that we begin to see that a breakdown originally worked out to express expenditure can impress its pattern on efforts, events and documents. That a method of controlling the distribution of money is only one detail in the system of organizing the work of the whole office. The architects who say, truthfully and sincerely, that they 'just haven't the time' to cost plan are expressing the fact that, for the most part, the profession is trying to discharge complex tasks within a system of organization evolved by a previous simpler age. Rather as if a team of men making motor cars were to try to organize themselves and their work in the same way as carriage builders of the 1890's.

There is a curious irony here, for the architect's strongest claim on society is his skill in planning, in co-ordinating space and material to meet a complicated diversity of needs and functions—a skill which, one feels, would naturally extend to the planning of time and events. When the idea of such planning, of *management* does take root in the profession, as soon it must, we may well find that the architects bring to it a humanity, a cultural authenticity absent so far from other, better developed fields of management.

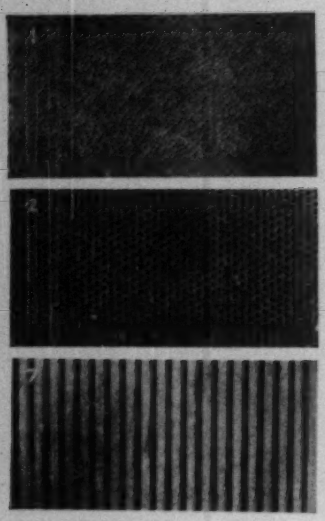


comparative speed and cost *on the left. further information compiled from published analyses. Horizontal columns to the left were plotted by dividing the number of weeks in the contract into the total floor area; columns to the right by dividing the weeks into the cost. The diagram represents averages of several buildings.*

THE INDUSTRY

Textured concrete

The texturing of concrete, like the application of colour to a building, is a facility which architects must use with caution. Nevertheless, it is always of interest to know what is to be got and how to get it; and a new publication by the Natural Rubber Development Board entitled *Casting Concrete against Textured Rubber* tells precisely this. The object of this booklet is to outline the results of experimental work which has been carried out jointly by the NRDB and the CCA since 1949. It is concerned both with the technique of



textured concrete.

handling and with the strength and limitation of the medium. For the architect, the first motive for texturing concrete is to give a particular 'value' to a plane; it is worth remembering, however, that texturing improves weathering by confining hair cracks. Included in the booklet is a review of the patterns which are so far standard. Three of the most successful we show here: the numberings being for identification. The criterion of choice seems to be that when the finished effect is fairly described as a 'texture' it is successful, but when it is more truly described as a 'pattern' it is hazardous. The booklet may be obtained from the *Natural Rubber Development Board, Market Buildings, Mark Lane, London, E.C.3.*

Glass cladding

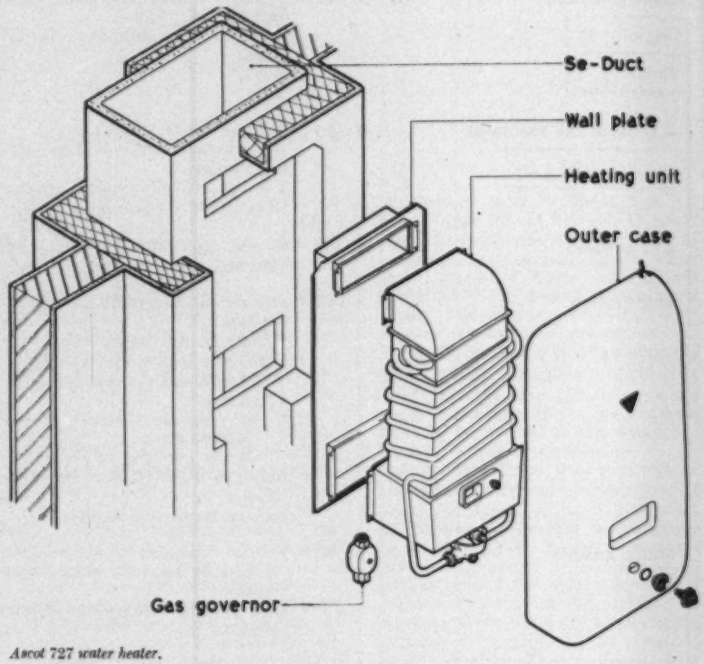
The handsome, more-colourful-than-life brochure which Pilkingtons have got out on glass cladding (edited by Thomas A. Markus, late of MIT) has one proposal to make which is quite outside the glass curtain economics controversy and concerns the incorporation of advertising within glass panels. Though neon signs superimposed on a building can have great charm (analogous to that of surcharges on postage stamps) they have the inherent disadvantage that they are open to the weather, that they are the devil's own job to keep clean, and that their presence makes the cleaning of the building behind virtually impossible. They also have the fortuitous disadvantage that they are by custom normally removed from the architect's control. This new turn in technical events gives the architect an entry where he has never been before and where—if he enters into the spirit—he ought to do very well. So that this thought may strike them with full force, they should turn to the brochure itself, which may be obtained from *Pilkington Bros. Ltd., St. Helens, Lancs.*

Spray basin

We have already commented on the 'Unatap' spray tap. It has now been realised that washing by spray is a very different process from washing by immersion, requiring a different shape of basin. Two conditions have to be met: first to receive the cone-shaped spray, second to make it possible to wash your face in the spray without hitting the tap. To meet these conditions Alfred Goslett & Co. have designed their 'Swanlyne-Unatap' basin with an asymmetric kidney-shaped bowl. Made of vitreous china, and available in white and colour, it has no overflow and a grated waste in place of plug and chain.
Alfred Goslett & Co. Ltd., 127-131, Charing Cross Road, London, W.C.2.

Swanlyne-Unatap basin.

Ascot 727 sensibly lists other manufacturers' products which can be used on an Se-duct. It is interesting to notice that when this was published (about the time of the Building Exhibition) there were four convector heaters, two forced draught heaters and a clothes drying cabinet; but there must now be more than this.
Ascot Gas Water Heaters Ltd., 255 North Circular Road, N.W.10.



Ascot 727 water heater.

Ascot on the se-duct

A factor which has always discouraged the use of gas water heaters in multi-storey buildings has been the need to supply a separate flue to each appliance. The first step to overcome this was the introduction of the balanced flue, a system whereby an appliance could both take its air and discharge its fumes outside the building. From the planning point of view, a disadvantage of the balanced flue is that an appliance must be fixed against an outside wall. Another disadvantage is that the flue terminal, however unobtrusive it may be, is one more little 'incident' on the façade which has to be accommodated. The next stage was the development of the Se-duct (named after the South Eastern Gas Board, who pioneered its use) which is really an adaptation to gas of the principle of the solid fuel 'Shunt' or 'branched' flue. The advantage of the Se-duct is, of course, that appliances can be fixed to an inside wall. It is no use having an Se-duct, however, unless you have equipment which has been designed to discharge into it. The first firm to manufacture a gas water heater on the balanced flue principle in this country were Ascot, who developed their Ascot 715 instantaneous water heater for this purpose. An instantaneous water heater is an admirable piece of equipment to use on this principle, as it takes, comparatively, a lot of air (the Ascot 715 is rated at 97,500 Btu./hr.) and when it has to take this air from the room special ventilation may be needed. The Ascot people have now adapted the Ascot 715 for use with an Se-duct, calling this new version the Ascot 727. Since the economy of an Se-duct installation must depend on its being usable by other than water heaters, their new brochure on the

Give rock a bad name

Architects who are sensitive to the overtones produced by a name may have been put off for ever when they first heard of 'Glamorock.' If so, this is in all probability a pity, for it promises to be the most interesting rendering that has come on the English market for a long time. Surprisingly enough, though the material is obtainable in about 20 different colours—mostly blacks, browns and greens—these are all produced by natural rocks and for this reason, it is claimed, will not fade. These rocks, crushed to three different finenesses to produce three different finishes, are premixed with a clear setting plastic cement and are applied in two coats to produce a finished surface which is only a matter of $\frac{1}{16}$ in. thick. The effect is admirable—provided, of course, that the surface behind is smooth and regular; for as it is more nearly allied to a 'texture paint' than to a rendering in the traditional sense, it cannot, of itself, make good irregularities. The price varies with the finish chosen, but the *finished* cost (i.e. labour plus material) is given at between 15s. and 17s. 6d. per square yard.
Surface Protection Ltd., 18 London Street, EC3. (Royal 8511.)

Infill panels

In our review of panel infillings for curtain walls published in the September 1957 issue, we lamented the fact that we were unable to include the panels of William Mallinsons because in our view these were not 'standard' panels which could be bought off the peg. It was pointed out to us subsequently that the

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It all adds up to Concrete—

In the Alderley Park, Cheshire, Research-Laboratories for I.C.I.'s Pharmaceuticals Division

(*Architects:* Harry S. Fairhurst & Son, F.R.I.B.A.)

the forms of structural design were conditioned by the various functions of the buildings. For instance . . .

the Animal Houses have *cantilevered tapered plate* with hollow columns

the Wash-up unit a *prestressed monitor roof*

the Administration entrance hall *bunded plate*

and the Workshop *welded trussed beams*

—nearly 1000 tons of reinforcement designed by

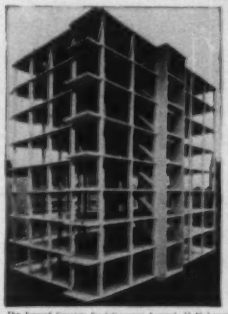
Truscon

The Trussed Concrete Steel Co. Ltd., 35/41 Lower Marsh SE.1 Telephone: WATerloo 6922

ENGINEERING

PRE-CAST

The Plate System by Truscon



One of the finished blocks of Council Flats, Millard Hill Estate, Birmingham. J. G. Sheppard Fidler, F.R.I.B.A., City Architect, compared with the model of its Plate Structure.

When we design and construct on the Plate System we provide a concrete frame without beams. We do not do this by making them into walls, or by using heavy, deep floors, or drop panels with flare-heads to the columns; but simply by designing the beams away. The Plate System is at its best with a regular grid, yet it is often the only reasonable solution when columns are irregularly placed.

The Plate System does not compress an architect's work within the framework of a stereotyped plan nor does it attempt to do his work for him. It is more than a system of design, for combined with careful planning and the use of cranes and precast components we have made it a very rapid system of construction. It is cheap in cost but not in appearance.

The outstanding application of the Plate System is to flats and offices: and recent developments have widened its scope to industrial work.

The Trussed Concrete Steel Company Limited, 35/41 Lower Marsh, London SE.1. Telephone WATerloo 6922

CONSTRUCTION

HY-RIB

Air Traffic Control Building (The Central Block), London Airport. Architect: Frederick Gibberd, F.R.I.B.A. Consulting Engineers: Sir William Halcrow and Partners

Truscon Theorem 5

Required: Fine Floors for a fine building

The Central Block at London Airport is a fine building

..Truscon Floors were used

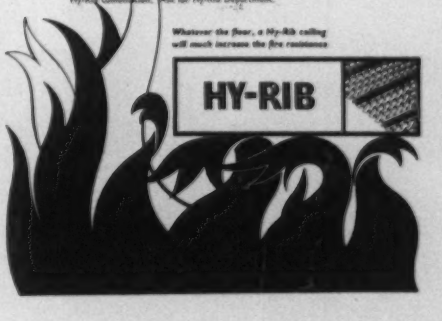
q.e.d. Truscon

The Trussed Concrete Steel Company Limited, 35/41 Lower Marsh, London S.E.1. Telephone, WATerloo 6922

HY-RIB ceiling survives four-hour FIRE test

Plaster on a Hy-Rib base is true and sound — held fast and fortified by the steel mesh and tangs. And it is a very efficient fire shield. At the Fire Research Station recently a thin concrete floor — an uncertainty for a one hour rating — qualified with a Hy-Rib ceiling close below for four hours fire resistance. In the last stages of the test, the furnace temperature topped 1120°C. yet Hy-Rib still held the basic hemihydrate gypsum plaster intact. We will gladly advise on the fire resistance potential of any floor and Hy-Rib combination. Ask for Hy-Rib Department.

Whatever the floor, a Hy-Rib ceiling will much increase the fire resistance



by Truscon

The Trussed Concrete Steel Company Limited, Truscon House, Lower Marsh, London SE.1. Telephone: WATerloo 6922

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same applied to the products of several manufacturers whose names *were* included. To make the nature of their service to curtain walling clear, Mallinsons have now standardised the specification (but not the bounding dimensions) of a number of panel types, marketing them under the trade name 'Mallite.' These we describe in tabular form below. It must be noticed, however, that the U value is given for the *panel*, whereas it ought strictly to be applied only to the whole wall. The whole subject of what U values we may expect from completed curtain walls is veiled in mystery and for the time being we must make do with separate values for the component parts.
William Mallinson & Sons Ltd., 130-150, *Hackney Road, London, E.2.*

specification for Mallite panels.

facing	maximum dimensions		maximum recommended size	core material	approximate thickness	weight	thermal insulation	
	length ft.	width ft.	sq. ft.		in.	lbs./sq. ft.	K(a)	U(b)
vitreous enamelled steel	8	4	24	1 in. cork	1¼—1⅜	3—4	0.30	0.20
				1 in. fibreboard	1¼—1⅜	4—5		0.25
				⅞ in. ,,	⅞—1¼	3½—4½	0.37	0.27
				½ in. ,,	⅝—⅞	3—4		0.30
				½ in. asbestos(c)	½	4	0.75	0.60
wood veneer	10	4	24	1 in. cork	1 1/16—1 3/16	2	0.30	0.20
				1 in. fibreboard	1 1/16—1 3/16	2½		0.25
				⅞ in. ,,	15/16—1 1/16	2¼	0.37	0.27
				½ in. ,,	9/16—⅝	1⅞		0.30
				½ in. asbestos(c)	9/16	2	0.75	0.60
aluminium plain stucco ribbed	10	5	24	1 in. cork	1 1/16—1 3/16	2	0.30	0.20
	8	4		1 in. fibreboard	1 1/16—1 3/16	2½		0.25
	10	3		⅞ in. ,,	15/16—1 1/16	2¼	0.37	0.27
				½ in. ,,	9/16—⅝	1⅞		0.30
				½ in. asbestos(c)	9/16	2	0.75	0.60

(a) K value is for core material. (b) U value is for panel (approximate). (c) single sided panels—no backing.

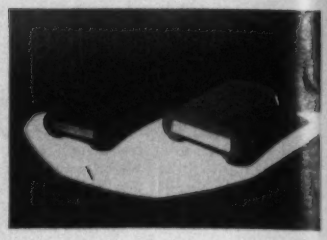
Letters carved in slate

In the article on *Small Scale Lettering* in the February issue we illustrated the lettering shown right, describing it as 'cut stone letters.' They were in fact carved in slate. Ralph Beyer, who sculpted them, has developed the *genre* primarily for *external* use, on fascias, etc. The letters can be fixed to a building or cut *in situ*, the basic cost for cutting varying between 6s. 6d. and 19s. per letter. The cost of polished slate is 30s. per sq. ft. for ¾ in. thickness.
Ralph Beyer, c/o Artists Management Association, 11, Dacre Street, London, S.W.1.

carved slate letters.

Vinyl handrails

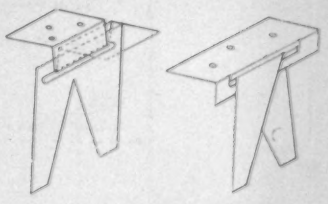
Plastics have generally proved satisfactory as architectural trim where they have no structural stiffness to provide: they make good coatings if there is something more substantial which you can 'feel' beneath them. A good use in point is as a handrail. Marleys, who were the first to take over this idea in this country, first marketed a vinyl handrail some two years ago. There were then two sizes only, to fit over core rails of 1½ in. by ¼ in. and 1½ in. by ⅜ in. They have now produced a third size to fit over a 2 in. by ⅜ in. core. This new arrival much increases the usefulness of the range as it permits 1½ in. uprights. On the whole we have been making our rails and balusters a fraction on the flimsy side lately. Vinyl rails can take in bends with a 3 in. internal diameter and can be got in red, grey, green, blue, black, pewter and bronze. Marley themselves supply and fix. The cost is about 10s. per foot run (including wreathes and bends) for the 1½ in. rails, and about 15s. per foot run for the 2 in. rail.
Marley Tile Co. Ltd., Sevenoaks, Kent.



Marley vinyl handrails.

Economy Copper Roofing

A disadvantage of traditional copper roofing is that you must, generally speaking, form drips every 7 ft. or so across the fall. This is costly in labour and it may, on occasion, make the detailing of verges and gutters difficult. To overcome these disadvantages the Copper Development Association have evolved a version which they call 'Economy copper roofing.' This requires a harder copper to the traditional method and by incorporating an ingenious system of 'expansion cleats,' which allow the



clips for copper roofing.

[continued on page 292

a special carpet for a special setting...

This is one example of a carpet specially woven for a client by Carpet Trades Limited, in a unique design, chosen to give atmosphere to a particular setting. The carpet illustrated is in 'Tobruk' Worsted Wilton quality, made on a soft green background, patterned in yellow, orange, blue and pink. One from a great range of Wilton and Axminster carpets made by Carpet Trades Limited, in a wide choice of qualities, colours and patterns. Ask to see them at Carpet Trades' showrooms in London, Manchester and Glasgow, or consult your supplier. You, too, can have a unique design woven specially for you. Write for details of the Service to Carpet Trades Ltd., Kidderminster.

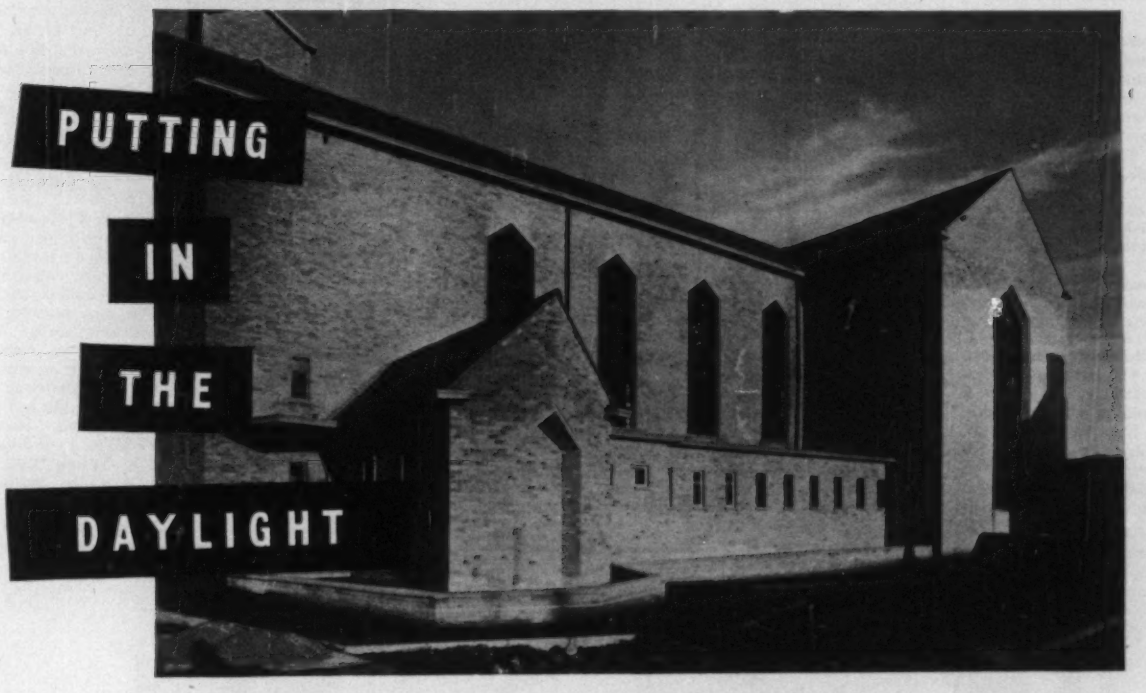
Supplied through normal trade channels only.

Messrs. Affleck & Brown Ltd., of Manchester use this carpet in their Children's Shoe Department. The design is based on the famous 'Noddy' character, by permission of Miss Enid Blyton and by arrangement with the Noddy Subsidiary Rights Company Limited. Carpet Trades Ltd., are the only carpet manufacturers licensed to incorporate Miss Blyton's characters in Wilton and Axminster carpets.

CARPET TRADES LIMITED · KIDDERMINSTER

(civ)

Quietly down the centuries, as long as men have built to express their faith, they have used daylight to enhance the dignity of the places of worship. Today, the architect can handle this natural light with more flexibility, thanks to new materials and their new applications.



AT ST. STEPHEN'S DALMUIR

Architect:
Thomas S. Cordiner F.R.I.B.A.

This clean-cut, deceptively simple church, built in Dalmuir, is designed to a cruciform ground plan, with low aisles to emphasise the height of the lofty nave. Maclean Metal Windows, specially fabricated to the architect's design, are used for lighting both nave and transepts. The dome lights above the aisles are also supplied by the company.

Further information about the versatility of Maclean Metal Windows will be supplied on request.

Maclean METAL WINDOWS

OF HAMILTON

MACLEAN & CO. (Metal Windows) LTD. CADZOW WORKS
LOW WATERS ROAD, HAMILTON, LANARKSHIRE
Hamilton 1410-4

ABERDEEN:	13 Bridge Street Tel. Aberdeen 52331.
EDINBURGH:	7 Albany Street, Tel. Waverly 2190.
NEWCASTLE:	14a Pilgrim Street, Tel. Newcastle 27776.
BELFAST:	32 Ann Street, Tel. Belfast 32003.
LIVERPOOL:	39 Gardners Row, Bevington Bush, Tel. North 0491.
LONDON, W.C.1:	36 High Holborn, Tel. Holborn 2462.
BIRMINGHAM, 29:	Selly Oak, Tel. Selly Oak 1188.
SHEFFIELD:	Trinity Works, Eyre Street, Sheffield, 1, Tel. Sheffield 20162.
DERBY:	Friargate Works Tel. Derby 48227.

continued from page 290]

sheeting to slide without loosening the fixing to the roof surface, enables lengths of up to 26 ft. to be laid in a single fall. This has the practical effect of cutting out drips on all but the widest roofs and is said to result in economies of up to 30 per cent. 'Economy' copper roofing is fully described in a handbook with this title which is available (free) on application from the CDA.
Copper Development Association, 55 South Audley Street, W.1.

CONTRACTORS etc

Offices for Sogenique (Service) Limited at Newport Pagnell, Buckinghamshire. *Architects:* Gordon & Ursula Bowyer. *General contractors:* Simcock & Usher. *Sub-contractors: Steel reinforcement:* Rom River Reinforcement Service. *Pre-stressed concrete floor and roofing units:* Costain Concrete Co. *Pre-cast concrete mullions, stairtreads and facing slabs:* Liverpool Artificial Stone Co. *Metal windows and glazing:* Aygee Ltd. *Dome roof light:* T. & W. Ide Ltd. *Roofing:* Permanite Ltd. *Rainwater pipes and gutters:* J. & R. Griffiths Ltd. *Slate facing slabs:* Setchell & Sons. *External metal gates:* A. J. Binns Ltd. *Electrical installation:* F. T. Lovell & Co. *Heating installation:* James Perkins & Son. *Sanitary fittings:* John Bolding & Sons. *Underfloor ducts:* The Key Engineering Co. *Terrazzo flooring:* Jaconello Ltd. *Cork tile flooring:* Resilient Tile Flooring Co. (Ealing). *Thermoplastic tiles:* A. R. & W. Cleaver. *Ironmongery:* D. A. Thomas & Co. *Letter box and name plate:* Dryad Metal Wks. Ltd. *Reception desk and staircase balustrade:* F. W. Clifford Ltd.

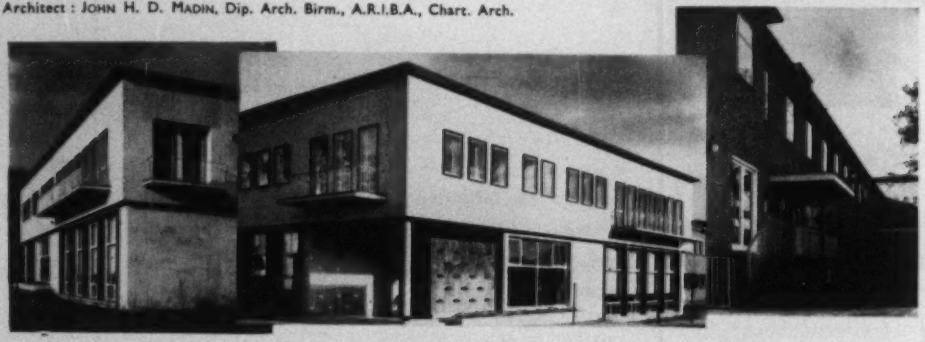
Headquarters for the Engineering and Allied Employers' Association, Birmingham. *Architect:* John H. D. Madin. *Builder:* W. J. Whittall & Son. *Sub-contractors: Steel fabric and bar reinforcement:* Guest, Keen & Nettlefold (Reinforcements) Ltd. *Special facing bricks, air bricks and sill tiles:* Blockleys Ltd. *Common bricks:* London Brick Co.; King's Norton Brick Co. *Engineering bricks:* Aldridge Brick & Tile Co. *Broughton Moor slate surrounds and marble work:* W. H. Fraley & Son. *Asphalte roofing and paving:* The General Asphalte Co. *Insulating roof screeds:* Celcon Ltd. *Reconstructed stonework and copings, granolithic floors and steps:* John Ellis & Sons. *Special steel windows, lantern lights and gearing:* Henry Hope & Son. *Special double glazing and armour plate doors:* Messrs. Glass (Coventry) Ltd. *Luwe tile plastic ceiling louvres:* Harris & Sheldon Ltd. *Aggregates:* Midland Gravel Co. *Cement:* Cement Marketing Co. *Electrical installation:* B. French Ltd. *Switchgear, general lighting fittings and installation of cold cathode tube lighting:* General Electric Co. *Other lighting fittings:* The Merchant Adventurers Ltd.; Best & Lloyd Ltd. *G.P.O. and internal telephone systems:* Greenwood's & Airvac Ventilating Co. *Interal telephones:* Siemens Bros. & Co. *Electric switches:* Britmac Electric Co. *Drying cabinet heater:* E. K. Cole Ltd. *Venetian blinds and electrically controlled venetian blind:* Venetian Vogue Ltd. *Cellar drainage pumps:* James Beresford & Son. *Heating hot water and plenum systems:* Brightside Heating and Eng. Co. *Electric fires:* H. Frost & Co. *Acoustic blanket and insulating mats:* Stillite Products Ltd. *Special leatherwork and light fittings:* H. M. Roberts Ltd. *Gas services:* West Midlands Gas Board. *Gas appliances:* Ascot Gas Water Heaters Ltd. *Gas cookers and kitchen extraction equipment:* Radiation Group Sales Ltd. *Wrought iron balustrades and steel staircase:* Best & Loyd Ltd. *Special folding sliding doors:* The Bolton Gate Co. *Duct covers and general metalwork:* H. E. Breaker (Metalwork) Ltd.; Broads Manufacturing Co. *Tarmacadam paving and felt roofing:* Neuchatel Asphalte Co. *Steel work:* Charles Wade & Co. *Waterproofing compounds and mastics:* Evode Ltd. *Stone pitching:* Rowley Regis Granite Quarries Ltd. *Wood block floors:* Vigers Bros. Ltd. *Terrazzo floors and paving:* Standard Pavement Co. *Rubber flooring:* Marshall Davies & Co. *Glazed tiles:* Pilkingtons Tiles Ltd. *Tile fixing:* J. W. Meredith. *Sliding door gear:* P. C. Henderson Ltd. *Special flush and veneered doors:* Leaderflush Ltd. *Suspended ceilings:* The Expanded Metal Co. *Door furniture designed by the architect, locks and general ironmongery:* James Gibbons Ltd.; Parker Winder & Achurch Ltd. *Sanitary fittings:* Charles Winn & Co. *Plasterers:* T. Hawkins. *Plaster, plastering materials and acoustic panels:* Gyproc Products Ltd. *Plumbers:* David F. Wiseman & Sons. *Decorators:* J. Patrick & Co. *Decorating materials:* Docker Bros. Ltd.; Permoglaze Ltd. *French polishing:* A. Woodward & Son. *Furniture, carpets and curtains to the architect's design, made up and fitted by:* Hampton & Sons.; I. & C. Steele Ltd. *Special curtains designed by the architect, and woven and printed by:* Tibor Ltd.; Arthur Sanderson & Son. *Other furniture:* Bell Barn Ltd.; Restalls Ltd. *Wooden door handles to the design of the architect:* Richard Swale. *Hat and coat racks designed by the architect:* A. Edmonds & Co. *Fireplaces, designed by the architect:* W. H. Fraley & Sons.; The Griffin Foundry Fireplace & Sanitary Fittings Ltd. *Safes:* Thos. Withers & Sons. *Haulage:* C. Williams & Sons. *Scaffolding:* Norstel Ltd. *Doormats:* The Birmingham Royal Institute for the Blind. *Landscape Gardening.* Garden Developments Ltd. *Concrete flower tubs:* Stuart's Granolithic Co. *Flag pole:* Poles Ltd. *Indoor plants:* Neale Bros. (Nurseries) Ltd.

House near Cowes. *Architect:* James Stirling. *General contractor:* H. J. Greenham. *Sub-contractors: Joinery and wood flooring:* H. W. Morey Ltd. *Sanitary fittings:* Stitsons Sanitary Fittings Ltd. *Ironmongery:* A. G. Roberts Ltd. *Electrician:* F. R. Hilton. *Bricks:* W. Dibben & Sons. *Varnish and distemper:* Walpamur Co. *Insulation quilt:* Fibreglass Ltd. *Light fittings:* Merchant Adventurers Ltd.

The Bank of London & South America, Ltd. *Interior designed by:* John Wright. *General contractor:* Trollope & Colls. *Interior contractors:* Bath Cabinet Makers Ltd.; Hamptons & Sons. Trollope & Colls. *Sub-contractors: Woodblock flooring:* Acme Flooring & Paving Co. *Patent flooring:* Korkoid Decorative Floors. *Central heating:* Young Austen & Young Ltd. *Electric wiring:* Drake & Gorham, Ltd. *Electric light fixtures:* General Electric Co. *Ventilation:* Young Austen & Young Ltd. *Plumbing:* Trollope & Colls. *Sanitary fittings:* John Bolding & Sons. *Stairtreads*

[continued on page 294

Architect : JOHN H. D. MADIN, Dip. Arch. Birm., A.R.I.B.A., Chart. Arch.



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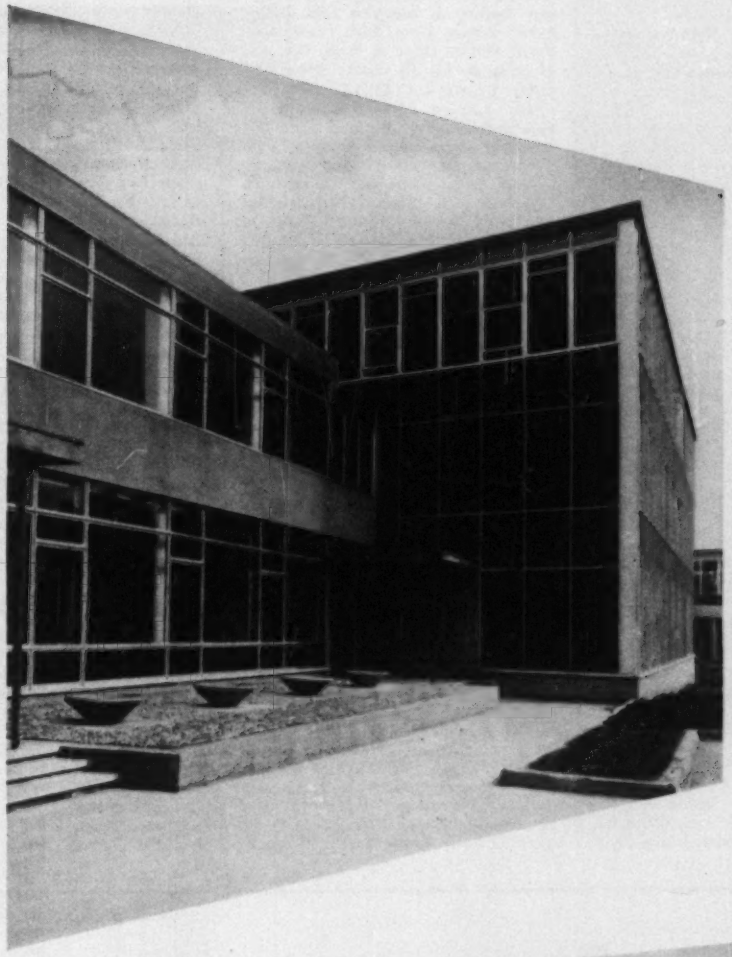

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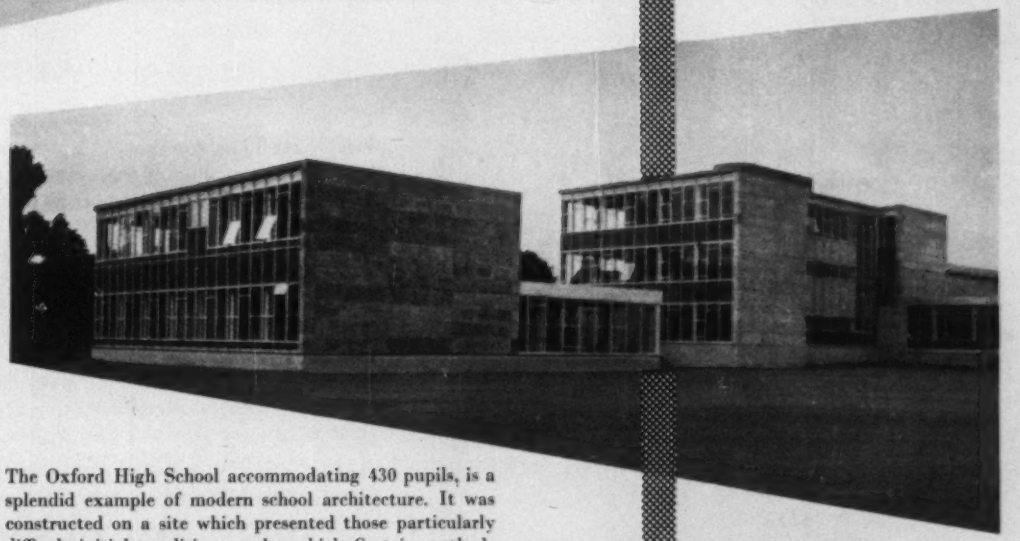

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Diespeker & Co. *Door furniture:* Alfred G. Roberts Ltd. *Casements:* Crittall Manufacturing Co. *Window furniture:* Crittall. *Bells:* Drake & Gorham. *Telephones:* Telephone Rentals Ltd. *Sunblinds:* Deans Blinds. *Decorative plaster:* G. Jackson & Sons. *Metalwork:* Comyn Ching & Co. *Joinery:* Hamptons & Sons; Bath Cabinet Makers Ltd. *Tiling:* W. B. Simpson Ltd. *Textiles and carpets:* Hampton & Sons; Bath Cabinet Makers Ltd.; Edinburgh Weavers; Gordon Russell Ltd. *Wallpapers:* Coles of Mortimer Street. *Furniture:* Hampton & Sons; Bath Cabinet Makers Ltd. *Chairs:* Hines & West Ltd. *Office furniture:* Roneo Ltd. *Shrubs and trees:* Winkfield Manor Nurseries. *Office fittings:* Hampton & Sons; Bath Cabinet Makers Ltd. *Cloakroom fittings:* John Bolding. *Lifts:* Waygood-Otis Ltd. *Clocks:* Synchronome Co. *Water supply:* Trollope & Colls. *Water-softening plant:* Permutit Co. *Signs:* The Lettering Centre.

Middlesbrough Little Theatre. *Architects:* Elder & de Pierro. *General contractor:* John McCreton Ltd. *Subcontractors: Site works and excavations and car parks:* Lonsdale (Tees-Side) Ltd. *Facing bricks and precast concrete: Waterproofing:* Quickset Water Sealers Ltd. *Plastering:* J. B. Rodgers (Erimus) Ltd. *Heating and ventilation:* Rowells (1924) Ltd. *Electrical installations:* C. Horne & Co. *Flush doors:* Lochead Manufacturing Co. *Structural steelwork:* Scaffolding (Gt. B.) Ltd. *Plumbing and glazing:* Watson & Coates Ltd. *Cork lino and thermoplastic floors:* Semtex Ltd. *Painting and decorating:* A. Hector Grabham Ltd. *Seating:* C. R. Harrison & Sons. *Stage lighting:* Watts & Corry Ltd. *Fire curtain and haystack lantern release apparatus:* Hall Stage Equipment Ltd. *Illuminated signs:* Emett & Co.

Store for Dunn's of Bromley, Kent. *Architect:* Bertram Carter. *General contractors:* E. H. Smith (Croydon) Ltd. *Sub-contractors: Asphalte and felt roofing:* Excel Asphalte Co. *Bricks:* Henry J. Greenham (1929) Ltd. *Glass:* James Clark & Eaton Ltd. *Patent glazing, casements and window furniture:* Williams & Williams Ltd. *Wood flooring:* Hollis Bros. Ltd. *Patent flooring:* Alpha Mosaic & Terrazzo Co. *Central heating and stoves:* Matthew Hall & Co. *Electric light fixtures:* Troughton & Young (Lighting) Ltd.; Merchant Adventurers of London Ltd. *Boilers:* Ideal Boilers & Radiators Ltd. *Door furniture:* Yannedis & Co. *Telephones, bells and clocks:* General Telephone Systems Ltd. *Sanitary fittings:* Adamsez Ltd. *Fireproof doors:* Leaderflush Ltd. *Lifts:* J. & E. Hall Ltd. *Signs:* The Lettering Centre.; London Signs & Illuminations Ltd. *Paint:* Keystone Paint & Varnish Co.

Training College at Birmingham. *Birmingham City Architect:* A. G. Shepherd Fidler. *Consultants: Structural engineer:* S. Willis. *Heating, lighting and ventilation:* Hoare Lea & Partners. *Quantity surveyor:* Silk & Frazier. *General contractor:* B. Whitehouse & Sons. *Heating and hot water:* Brightside Foundry & Engineering Co. *Lighting and electrical:* Frank Hancock (1939) Ltd. *Ventilation:* Morgans Air Treatments Ltd. *Sub-contractors and suppliers: Structural steelwork:* Bannister Walton & Co. *Precast concrete floors:* Concrete Ltd. *Bricks:* Aldridge Brick & Tile Co.; Leicester Brick Co. *Asphalte tanking:* Highways Construction Ltd. *Reconstructed stone:* John Ellis & Sons. *Exposed aggregate wall cladding:* Roman Mosaic Ltd. *External rendering:* Callow & Keppich Ltd. *Stonework:* Wragg Bros. Ltd. *Metal windows:* Henry Hope & Sons. *Glazing:* Merrick & Heath. *Glass dome roof lights:* Pearce & Cutler. *Concrete roof lights:* Luxfer Ltd. *Built-up bituminous felt roofing:* Midland Asphaltic Roofing; Birmingham Roofing Felt Systems. *Insulating roof screeds:* Celcon Ltd. *Plumbing:* David F. Wiseman & Sons. *Prefabricated plumbing:* Econa Modern Products Ltd. *Engineering bricks:* Titford Brick Co.; Hadley Bros. & Taylor. *Common bricks:* London Brick Co.; Marston Valley. *Foam slag partition blocks:* William Prestwich, Dronfield. *Bellrock plaster partitions:* Bryans Adamanta Ltd. *Preformed W.C. partitions:* Roman Mosaic Ltd. *Plastering:* James Siviter. *Wall tiling:* Carter & Co. *Impervious wall finishes:* John Ellis & Sons. *Floor finishes: Wood block and strip flooring:* Stevens & Adams Ltd. *Thermoplastic tiles:* Semtex Ltd. *Cork tiles:* Cork Insulation & Asbestos Co. *Rubber tiles:* The Hemisphere Rubber Co. *Terrazzo:* Roman Mosaic Ltd. *Granolithic:* E. B. Trumper & Co. (B'ham). *Suspended board ceilings:* Midland Wallboards Ltd. *Acoustic and anti-condensation finishes:* Pyrok Contracts (Midlands) Ltd. *Paint:* Leyland Paint & Varnish Co. *Hardwood finishes:* Cellon 'Non Flam.' *Painting and decorating:* General Contractor. *Joinery:* General Contractor; Walsh Graham Ltd. *Flush doors:* Jablo Plastic Industries Ltd. *Ironmongery:* James Gibbons Ltd. *Cloakroom fittings:* Mountford Bros.; General Contractor. *Sanitary fittings:* H. O. Bennion. *W.I. balustrades, etc.:* J. R. Pearson Ltd.; Bigwood Bros. Ltd. *Lifts:* Evans Lifts Ltd. *Lightning conductors:* W. J. Furse & Co. *Electric incinerators:* The Hygienette Manufacturing Co. *Roller shutters:* Roller Shutters Ltd. *'Sylenz' cushioned floor clips:* J. C. Birch Ltd. *Inset electric fires:* H. Frost & Co.; Ferranti. *Panels and veneers:* H. Morris & Co.; Bakers of Wycombe Ltd.; Warerite Ltd.; Perstorp. *Wall and ceiling linings:* Rudders & Paynes Ltd. *Hockey pitch:* Barrans Landscape Ltd. *Fencing:* Penfold Fencing Ltd.; En-Tout-Cas; Durafencing. *Roads, etc.:* Highways Construction Ltd. *Concrete paving slabs:* James Siviter. *Tennis court surface:* Vale-Travers Ltd.; B'ham Asphaltic Pavings Ltd. *Heating and hot water: Boilers:* Beeston Boiler Co. *Calorifiers:* David Todd Ltd. *Pumps:* Holden Brooke & Co. *Stokers:* Joshua Bigwood & Co. *Radiators and rayrads:* Ideal Boilers & Radiators Ltd. *Warm air circulators:* Dunham Ltd. *Valves:* Hattersley Ltd. *Sectional tanks:* Horseley Bridge & Thomas Piggott. *Lagging:* Leroy Co. *Thermostats:* Rheostatic Co. *Mixing valves:* Walker Crosweller. *Foot sprays, shower sprays and hosereels:* Charles Wynn & Co. *Electrical: Switch gear:* General Electric Co. *Switches:* G. E. Crabtree & Co. *Plugs:* Wandsworth Electrical Co. *Conduit and accessories:* Walsall Conduits Ltd. *Paper cable:* Pirelli Ltd. *V.I.R. cable:* Glovers Cables Ltd. *Fittings:* G.E.C.; Falk Stadelmann Ltd.; Frederick Thomas Ltd.; Best & Lloyd Ltd.; Troughton & Young Ltd.; Hailwood & Ackroyd Ltd.; Hume Atkins Ltd.; Loblite Ltd. *Internal telephones:* Reliance Telephones Ltd. *Clocks:* Gents. *Special furniture:* F. Restall Ltd.; Hoskins & Sewell; Griffin & George; Pochin Ltd.; B. Whitehouse & Sons; Vincent Ladbrook.

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